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MODERN TACTICS

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MODERN TACTICS.

BY

CAPTAIN H. R. GALL,

LATE 5TH FUSILIERS.

SECOND EDITION.

REVISED, WITH NEW MAPS.

"Battle is the final aim of all combinations of war. The first object ought to be to secure a victory; the second, to render it as complete as possible; the third, to prevent a defeat from becoming disastrous. The thoroughness of a victory or the mitigation of the evil consequences of a defeat depend upon knowing how to utilize time and place."—RÜSTOW.

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GENERAL VISCOUNT WOLSELEY,

K.P., G.C.B., G.C.M.G.,

COMMANDER OF THE FORCES IN IRELAND.

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NOTICE TO SECOND EDITION.

IN compliance with the numerous and important changes which have been introduced during the last year, by the publication of "The Infantry Drill Book, 1889," and "Field Artillery Drill, 1889," this edition has been thoroughly revised, and many of the chapters have been re-written.

Careful attention has been given to Cavalry, Mounted Infantry, and Machine Guns.

The effect of smokeless powder on tactics has been considered throughout the book, and summed up in a short chapter. A chapter on Map Reading and Placing Troops on a Map has also been added.

Captain Eustace Balfour has revised his chapter on Cyclist Infantry.

There are several new diagrams and maps; and in order to make the edition handier, the text and plates have been bound together in one volume.

LONDON,
September, 1890.

DEFINITIONS.

"À Cheval."—A deployment "à cheval" means a deployment on both sides of a road, stream or crest line.

"Abatis" is an obstacle formed of branches of trees laid close together, with branches towards the enemy.

"Base of Operations" is the actual starting place from which an army in the field proceeds to encounter the enemy, and to which it looks for reinforcements and supplies, and to return to recover itself if beaten. "An intermediate base" may be established between a force in the field and its base as above defined.

"Battery."—A work erected as a position for guns—the tactical unit of artillery.

"Blockhouse."—A covered loopholed building.

"Casemate."—A field casemate is a shell-proof chamber, the roof of which is covered with at least 4 feet of earth.

"Cone of Fire."—When a volley is fired at a target, the paths of the bullets in the air form a curved cone of fire.

"Defilade" is a term used in fortification. Troops are said to be "defiladed" when they are protected from the enemy's fire, as when they are on the reverse side of a hill.

"Defile" is a passage which can only be traversed by troops on a tactically narrow front.

"Double Lines of Operation" are the different lines of operation used by armies who advance from different starting points to the same destination.

"Escalade."—An assault by means of ladders, or climbing.

"Enfilade" is fire directed along the length of the object aimed at.

"Grand Tactics" decides the different orders of battle, whether they are to be defensive or offensive, conducted on interior or exterior lines, whether troops are to refuse a flank or to be concentrated on flanks or centre. They embrace the general scheme of a battle, and are exclusively the affairs of the commander-in-chief.

"Gun Epaulement."—A raised parapet to protect a gun in action.

"Gun Pit."—Sunken protection for a gun in action.

"Interior Lines of Operation."—An army is said to be operating on "interior lines" when its lines of operation are such that it can concentrate before the enemy can concentrate. The enemy in this case would be acting on "Exterior Lines."

"Inner and Outer Reserves."—"Inner Reserve."—A body of troops placed behind the first line of defence, either to cover its retreat, or to make counter-attacks within the position if penetrated.

"Outer Reserve."—A body of troops placed to support an advanced position, or on the exposed flank of a position, to make counter-attacks outside it.

"Lateral Communications" are the roads kept open between forces acting in concert for the purpose of mutual support and rapid concentration.

"Light Troops" is a term applied generally to all detachments pushed out from the main body of an army, and include the cavalry screening an army, advanced guards, outposts and reconnaissances of all descriptions.

"Lines of Communication" generally mean the roads by which an army in the field gets its reinforcements and supplies from its base.

"Lines of Operation" comprise the whole system of roads by which an army marches to its destination.

"Logistics" is the art of regulating details of marches, encampments, hospital arrangements, stores, baggage, &c.

"Lunette" is a work with two faces, forming a "salient angle," and two other faces, called "flanks," parallel, or nearly so, to the capital.

"Mobility" is the power of an army to concentrate in a certain place in a condition to take the field. The term is used in a minor sense in connection with moving troops rapidly to the right place at the right moment on the field of battle.

"Moral" means discipline.

"Objective."—That point which it is the object of a force to gain.

"*Point d'appui*" is a point on which either an army or a company can rest when turning. There is a "*point d'appui*" in every parade movement, as well as in every grand or minor operation of war.

"Pontoon."—A flat bottomed boat used for "floating bridges."

"Rallying Line" is a position selected in rear of the front line, only to be occupied in case of a reverse.

"Redoubt."—A small closed work with no flank defence for its ditches.

"Reduit," or "Keep."—A work constructed within another work, or fortified place.

"Strategy" is the art of conducting a campaign, moving troops on the *theatre of war.*

"Strategic Points" are places or fortresses, the possession or capture of which are considered likely to influence the conduct of a campaign.

"Tactics" is the art of manœuvring troops when in contact with or in the vicinity of the enemy.

"Tactical Units" are the combatant subdivisions of an army. "A Complete Tactical Unit" combines the three arms.

"*Tête de Pont*" is an open work constructed for the defence of a bridge, and affords protection to troops while waiting to march over the bridge.

"Theatre of War" embraces the entire districts in which operations of war are conducted, after one side has infringed upon the territory of the other.

"Traverse," a mound of earth built as a protection from fire.

"To Flank" a regiment or a battery is to afford it defensive support by posting troops or guns parallel to or in rear of its flanks.

"To Invest" is to surround a fortress, or an entrenched position, and cut it off from supplies and reinforcements.

"To Outflank" a position, or a force, is to manœuvre round its flank, and subject it to *enfilade fire*, or a shock attack in flank, or oblige an enemy to form front on a line at right angles to his original position.

"To Refuse a Flank" is to withdraw troops in rear of their general alignment.

"Unaimed Fire" is fire directed at an intermediate point, with an elevation to carry the projectile beyond, in order to strike an unseen object which is known or believed to exist at a certain range. It is also the term applied in the Drill Book to rifle fire within the limits of the 2nd zone, *i.e.*, 1,700 to 800 yards from the enemy's position.

"Vital Points" are places the possession of which must materially influence the issue of a battle.

"Zone of Fire" is that portion of ground embraced within the range of projectiles directed over it.

"Beaten Zone" is that portion of ground struck by projectiles fired with the same elevation, and directed on the same object: its depth decreases as the range increases; the width of ground beaten increases with the range.

"Zone of Premature Shells" extends to 900 yards in front of guns.

"Zone of Short Bursts" within 400 yards from the target guns are firing at.

THE TACTICAL ORGANISATION OF THE BRITISH ARMY.

(In accordance with General Orders, July, 1888.)

INFANTRY.

A Brigade of Infantry consist of—

Brigade staff.
4 battalions.
2 machine guns.
1 company commissariat and transport corps.
1 bearer company.
1 field hospital.

A Division consists of—

Divisional staff.
2 brigades of infantry (complete).

Divisional Troops.

*1 squadron of cavalry.
3 batteries field artillery.
1 divisional reserve ammunition column.
1 field company royal engineers.
1 company commissariat and transport corps.
1 field hospital in reserve.

Total strength 10,060, including 327 officers.

An Army Corps consists of—

Army corps staff.
3 complete divisions of infantry.

Corps Cavalry.

Head quarters of regiment and one squadron.

Corps Artillery.

3 batteries horse artillery.
2 batteries field artillery.
1 army corps reserve ammunition column.

Corps Engineers.

1 field company.
1 pontoon troop.
½ telegraph battalion.
Field park.

Corps Infantry.

1 battalion, 2 machine guns.
2 companies army signallers.
Commissariat and transport corps 1 company, and 2 companies for bakery columns.

Medical.

1 field hospital for army corps details.
Police and post office included in staff.

Detail of an Army Corps by arms—

STAFF.

Army corps.
3 divisional staffs.
6 brigade staffs.

Infantry.

25 battalions.
14 machine guns.
2 companies army signallers.

---

* A division, when acting independently, would probably have a regiment of cavalry, with a machine gun, and a detachment of mounted infantry attached to it.

CAVALRY.

1 regiment.

ARTILLERY.

3 batteries horse artillery.
11 batteries field artillery.
3 divisional reserve ammunition columns.
1 army corps reserve ammunition column.

ENGINEERS.

4 field companies.
1 pontoon troop.
½ telegraph battalion.
Field park.

MEDICAL.

10 field hospitals.
6 bearer companies.

Total strength officers	...	1,158
Rank and file ...	...	33,806
Interpreters ...	...	20
		34,984

CAVALRY.

A Regiment consists of—

4 squadrons, 144 ranks and file each, of which 122 in each squadron are mounted.

A Brigade of Cavalry consists of—

Brigade staff.
3 regiments of cavalry.
2 machine guns.
1½ companies commissariat and transport corps.
1 bearer company.
1 field hospital.

A Brigade of Cavalry, when two army corps are in the field, consists of 4 regiments.

A Division of Cavalry consists of—

Divisional staff.
2 brigades of cavalry (complete).

DIVISIONAL TROOPS.

2 batteries horse artillery.
2 machine guns.
Mounted detachment royal engineers.
1 battalion mounted infantry.
Divisional reserve ammunition column.
1 company commissariat and transport corps.
1 field hospital.

ARTILLERY.

A Battery of Field Artillery consists of—

6 12-pdr. breech-loading guns.
6 waggons.
177 all ranks.

A Horse Artillery Battery consists of—

6 12-pdr. breech-loading guns.
6 waggons.
186 all ranks.

Ammunition per gun—

Cartridges ...	...	...	101
Common shell	...	...	30
Shrapnell ...	...	...	70
Case...	...	...	8

A Machine Gun Detachment consists of—

2 machine guns.
1 officer, 12 rank and file.
8 mules or horses.

A Bearer Company consists of—

3 surgeons.
1 warrant officer.
6 sergeants.
1 bugler and 53 rank and file.

A Field Hospital consists of—

4 surgeons.
1 quartermaster.
1 warrant officer.
7 sergeants.
32 rank and file.

A Field Company Engineers consists of—

1 major.
1 captain.
4 lieutenants.
56 mounted } sappers.
156 dismounted }

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UNIVERSITY OF CALIFORNIA

MODERN TACTICS.

CHAPTER I.

The Advanced Cavalry.

THE operations of the advanced cavalry which precedes an army in the field may be divided into two phases. The object of the first phase is strategic rather than tactical. Its sphere of action is the country which separates the huge fractions of two mobilised and more or less concentrated armies, immediately before they advance to meet each other. During this stage the mission of the cavalry is threefold:—

1st. To endeavour to discover the dispositions of the enemy, and report them accurately to the Commander-in-chief.

2nd. To veil from observation the army it is covering.

3rd. To reconnoitre the country.

On the intelligent performance of these duties the proper direction of the first combined movements of troops on the actual theatre of war must largely depend.

The general who at the outset of a campaign possesses the best cavalry is able to keep himself informed of the enemy's dispositions, while his own are hidden from his opponent.

Such knowledge combined with secrecy will enable him to seize what is called the initiative, which means that he can direct his columns to march on certain

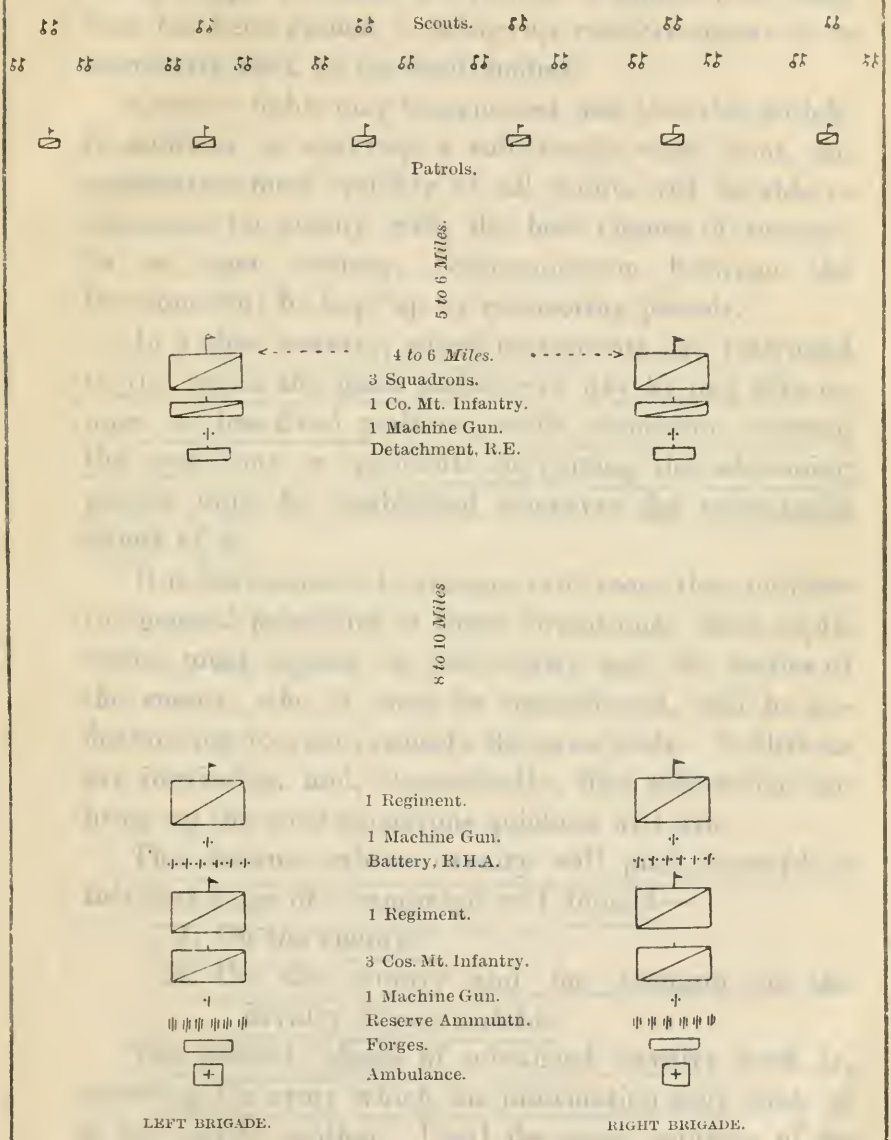
objectives, and either reach them without opposition or compel the enemy to conform to his own movements in order to oppose them.

The dispositions of the cavalry divisions or brigades pushed forward in front of an army will depend—

I. On the number of objectives.
II. The country.
III. The extent of the different fronts to be covered.
IV. The dispositions of the enemy.

The use of the word *screen* is now deprecated; it implies a somewhat too rigid and unbroken formation to be practical. In these days of enormous armies the advanced cavalry can no longer hope to form a continuous screen stretched across the entire front of the huge fractions which compose them.

Prior to moving from its allotted place of mobilisation on the frontier, whither it has been transported by rail, each of these large fractions forming in themselves complete armies will be preceded by cavalry, which in order to fulfil its mission must not be too widely extended, or it will be liable to be broken through, on the other hand it must not be over-concentrated, or it will be liable to be turned. The various bodies of cavalry pushed forward must, however, work with a system, and lateral communications must be established between fixed points. The country to be scoured should be divided into sections. The best formation would appear to resemble that suggested by moving outposts on the patrol system. It would consist of patrols supported by contact regiments, or squadrons, with strong main bodies composed of either divisions, brigades, or regiments, with horse-artillery, mounted infantry, and machine-guns. The act of breaking through the enemy's cavalry requires the power of speedy concentration, while the necessity of frustrating



FORMATION OF A CAVALRY DIVISION COVERING AN ARMY CORPS.

ORGANIZATION OF A CAVALRY DIVISION CONSISTING OF THREE CORPS.

similar attempts on the part of the enemy, requires strong supports behind the patrols to oppose him, until time has been gained to bring up reinforcements or to manœuvre back on the main bodies.

Cavalry fights may be expected, and that side which, in addition to covering a sufficiently wide front, can concentrate most quickly at all points will be able to encounter the enemy with the best chance of success. In an open country, communication between the fractions will be kept up by connecting patrols.

In a close country, where movements are restricted to the roads, the main bodies will day by day take up more or less fixed positions, while connection between the squadrons or regiments supporting the advancing patrols must be established wherever the cross-roads admit of it.

It is not desirable to attempt to do more than indicate the general principles of these formations; their application must depend on the country and the tactics of the enemy, who, it must be remembered, will be endeavouring to gain precisely the same ends. Collisions are inevitable, and, theoretically, that side which can bring up the most squadrons quickest will win.

The distance which cavalry will push forward in this first stage of a campaign will depend—

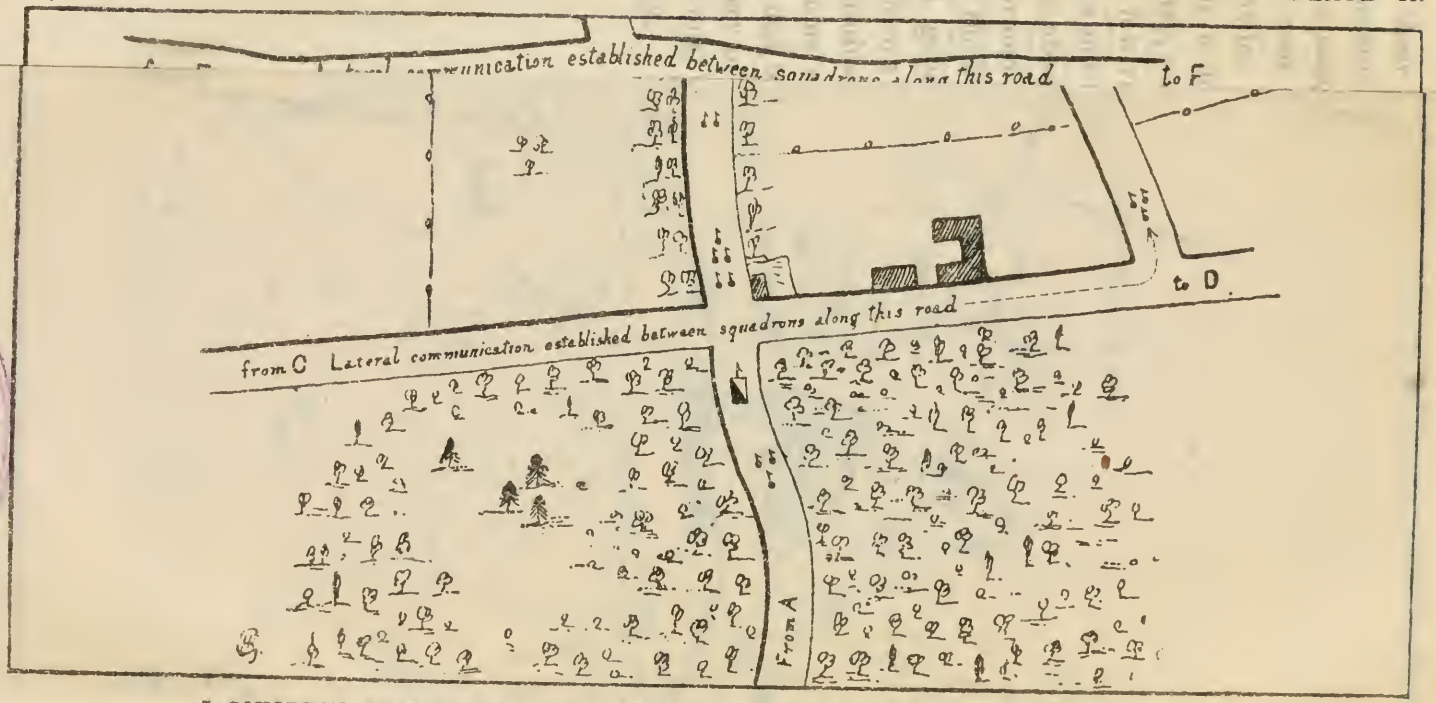
I. On the enemy.

II. On the country and the strength of the cavalry force available.

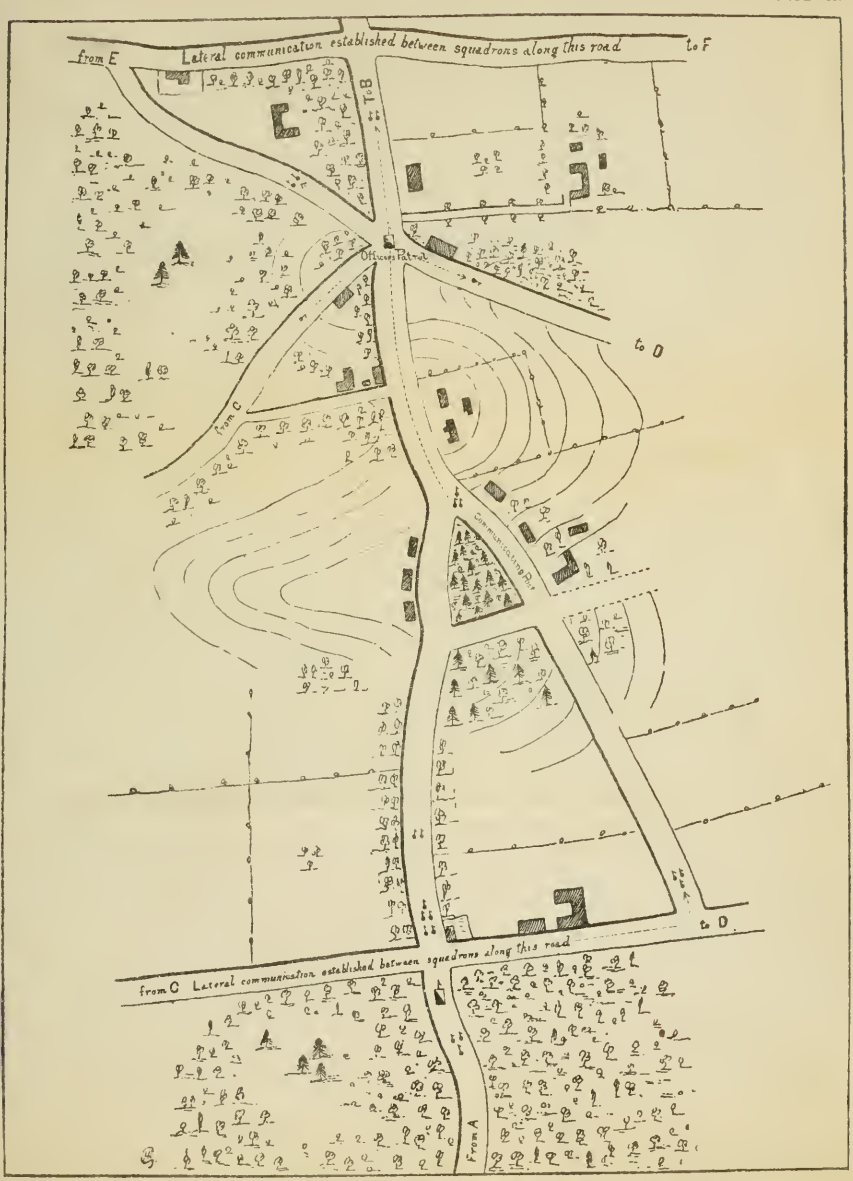
The second phase of advanced cavalry work is, covering the army which the information sent back to it has put in motion. Until the main columns of an army arrive within what is called striking distance of an enemy, its advanced guards are preceded by the main body of its cavalry, acting in front of, but in concert with them.

The duty of the cavalry will still be to oppose that of the enemy, which, though previously encountered and driven back, has probably not yet been seriously beaten, and is still actively engaged in front of and on the flanks of its own army.

Until the enemy's advanced guards, if he is marching, or his outposts, if he is halted, are met with, the cavalry continues to scout and give warning of dangers ahead. The necessity for vigilance increases as the intervening distance between hostile armies decreases, for it is then that the enemy's movements must be most carefully observed and reported. Strategy is now about to give way to tactics, and time must no longer be reckoned by weeks and days, but by hours and, perhaps, minutes. A turning movement, a rapid flank-march, a night-attack, a sudden inspiration, or a flash of genius, which unexpectedly proclaims a tactician of the first order, may yet retrieve the blunders of a fortnight; and to guard himself against surprise a cautious commander, who realises that "battle is the final end of all combinations of war," still looks to his cavalry, whose duty it is at this stage to make themselves rapidly acquainted with the minute details of localities. Their formations must still admit of speedy concentration to oppose the enemy's cavalry, which at this stage will probably be extensively used in making demonstrations and covering important tactical manœuvres. If patrols, well supported, are kept out in all directions, these movements will be observed and reported almost as soon as they are conceived. It was in the skilful execution of these important duties that the German cavalry excelled in 1870. Exploring localities in the neighbourhood of the enemy, maintaining communications between their own columns and covering their deployments, watching the approaches to and the movements of the enemy, they


communication established between squadrons along this road
to F
to D
from C Lateral communication established between squadrons along this road
from A

A SQUADRON FORMING PART OF A CAVALRY SCREEN WORKING IN A CLOSE COUNTRY.



A SQUADRON FORMING PART OF A CAVALRY SCREEN WORKING IN A CLOSE COUNTRY.

kept their generals constantly and accurately informed of the movements and intentions of the French, while at the same time they contrived to draw a veil round their own operations until the curtain rose on the field of battle.

In a mountainous, wooded, or much intersected country, cavalry cannot work, as they are at the mercy of a few riflemen skilfully handled; when the country is of a nature to preclude the employment of cavalry, or in the absence of this arm, reconnoitring duties must be performed by infantry in skirmishing order, sent out from the advanced guards.

A good example was furnished by the advance of the Crown Prince of Prussia's army through the Vosges Mountains in 1870. While in the mountains the cavalry divisions marched in rear of the columns, which were preceded by infantry; but on debouching into the plain country of France, the cavalry was at once pushed to the front, to reconnoitre and establish touch with the enemy.

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CHAPTER II.

Reconnoitring.

WHEN the advanced guards of hostile armies approach each other, their cavalry screens gradually fall back. The withdrawal of the advanced cavalry does not, however, imply that the necessity for reconnoitring no longer exists; on the contrary, it is more than ever necessary, to procure information concerning the nature of the ground in the immediate front and on the flanks of the army, as well as to discover the position, the arrangements, the number and movements of the enemy; but the presence of his infantry makes these objects more difficult to attain.

A general must, however, by some means, obtain information of what is going on around him, or he cannot, with confidence, act either aggressively or defensively. Instances of the disasters entailed upon armies and nations in consequence of their commanders' ignorance or neglect of the paramount importance of reconnoitring, furnish the history of the losing side of most campaigns since the middle ages.

There is no need to go far back in military history to verify this assertion. "In 1859 the French army, numbering 125,000 infantry, 11,000 cavalry, and 300 guns, met the Austrian army (146,000 infantry, 15,000 cavalry, and 700 guns) in full march at Solferino, neither army being aware of the vicinity of

the other."* Although encamped within a few miles of each other, these great armies took no measures for discovering each other's movements. The French happened to be marching in a formation better suited than that of the Austrians for deploying, and to this they largely owed their success.

In 1866 the Austrians failed utterly, partly owing to their inferiority of armament; but also in a great measure to the fact that their reconnoitring and patrol system was much inferior to that of the Prussians.

This inferiority has been attributed to the want of proper military education among the officers and non-commissioned officers to whom these duties were entrusted—duties which ought to be the A B C of every soldier.

In 1870 the French disasters were largely attributable to the same cause.

While the Prussian system (following closely on the well-established principles of Napoleon) never allowed of surprise, the Austrians in 1866, and the French in 1870, were repeatedly taken unawares, and thus severely beaten.

Another striking instance of the disastrous consequences attending the neglect of reconnoitring is furnished by the Russian and Turkish War of 1878. After the capture of Nikopolis on the 16th July, General Krüdener, commanding the 9th Army Corps, was ordered to occupy Plevna, and secure the right flank of the Russian army from attack during its contemplated invasion of Turkey across the Balkans. Plevna is only twenty miles south of Nikopolis.

On the 17th July Osman Pasha, with an army of 40,000 regular troops marching eastward from Widdin,

* "Hamley's Operations of War."

crossed the Vid river on the right flank of the Russians, and occupied Plevna in their immediate front, almost within striking distance of Krüdener's head-quarters. As General Krüdener had an ample cavalry force at his disposal, his ignorance of the enemy's movements, as indicated by his subsequent proceedings, is astonishing. On the next day, Krüdener directed General Shilder-Schuldener to take a brigade of infantry, thirty-two guns and the 9th Don Cossacks, march on Plevna, and occupy that town. Shilder-Schuldener started the same day, bivouacked half way between Nikopolis and Plevna, and, in spite of his having a regiment of cavalry with him, remained all that night in ignorance of the "presence" of Osman Pasha with a large army directly in his front. On the morning of the 19th, Shilder-Schuldener continued his march southwards. His cavalry, instead of covering his column, was marching on his right flank and considerably in rear, presumably looking out for any indications of the Turks, who had slipped past into Plevna two days previously. In the afternoon, Shilder-Schuldener reached the heights on the north-east of Plevna, and suddenly found himself under the fire of some Turkish batteries, posted about a mile and three-quarters in front of him, near the site of the famous Grivitza redoubt.

The whole tide of the campaign turned at this point. Without any reconnaissances of the enemy's whereabouts, number, or position, on the next morning, the 20th July, the Russian commander attacked an unknown force, which turned out to be one four times his strength, and one, moreover, occupying an entrenched position. He was terribly beaten, and so ended the first battle of Plevna.

This battle of the 20th July was followed at intervals

by what are known as the second and third battles of Plevna, both equally disastrous to the assailants. These ended in the investment of the place, and the complete collapse of the Russian plan of campaign, which had begun so brilliantly with the successful passage of the Danube and Gourko's famous reconnaissance in force.

A glance at the map of the Balkan Peninsula (Plate XIV.) will help the reader to realize the situations above described.

But we need not go so far afield, nor turn so far back as 1878. England has had her own lessons in South Africa, in Afghanistan, and in Egypt, demonstrating that the first rule of war, "gain early and accurate information of the enemy's movements," cannot, even when fighting against half-armed savages, be neglected with impunity.

A general in the field may be likened to a blind man; his advanced cavalry is his dog, to warn him of danger ahead, while his advanced guard is his stick, to ward off immediate danger.

The following brief account of the manner in which the Servian troops were surprised and handled at the battle of Slivnitza, tells its own tale too graphically to need any comment:—

"A Semlin telegram, sent this morning, says that the Serbs were retreating along the whole line; and Belgrade despatches, also of to-day's date, state that the utmost agitation prevails in that town. Eight hundred more wounded soldiers had made their appearance. They gave a distressing account of the manner in which their generals had behaved at Slivnitza. General Jovanovich's division was surprised in its camp during the night, and took to flight after sustaining enormous losses. The Meskovich division, badly led, suddenly found itself in close proximity to a Bulgarian redoubt, and

was decimated by a withering fire. As it withdrew it came into collision with a regiment belonging to the Danube division, which, mistaking it for a Bulgarian force, sent volley after volley into its ranks. At the same moment a Servian squadron and another portion of the Danube division were almost destroyed by their own comrades."

It is on the cavalry arm that the important duties of reconnoitring usually devolve, but should the nature of the country preclude the employment of cavalry, and in the absence of that arm, reconnoitring duties in all their details must be performed by infantry. Officers in command of reconnoitring parties are liable to be captured or disabled, and their duties and responsibilities, owing to the uncertain fortunes of war, may at any moment devolve on their subordinates, the non-commissioned officers.

Reconnaissances may be dealt with under two general heads:—

I. Armed Reconnaissances.

II. Secret or Individual Reconnaissances.

Under the first heading is included:

1. Reconnaissances in Force.
2. Reconnoitring Parties and Patrols.*

A RECONNAISSANCE IN FORCE is usually undertaken by a body of troops comprising all three arms, or by a body of cavalry and artillery.

In the case of all three arms being employed, the *object* of a reconnaissance should be clearly defined. If the commander be instructed to unmask an enemy, and make him disclose his position and numbers, a considerable display of actual aggressive force would

* The reconnoitring patrols furnished from outposts are not referred to in this chapter, as they form part and parcel of the outposts, and will be considered when we come to deal with outpost duties.

probably be needed. The enemy's outposts would stoutly resist any attempt to oblige the army they are covering to turn out, but such resistance must be overcome by the commander of a reconnaissance in force, for his business cannot be properly done unless he compels his enemy's troops to occupy the ground they actually intend to give battle upon. A practical and experienced soldier, seeing his enemy get under arms and form up in order of battle, will rapidly gather a lot of valuable information regarding his numbers, artillery positions, advanced posts, strong and weak points, flank defences, and the suitability of the ground he occupies both for defence and counter-attacks.

The commander of a reconnaissance in force will then act according to his special instructions. He may attack if a favourable opportunity presents itself, depending on the main body for support, or he may fall back under cover of the main body. Or he may be instructed to lure his opponents out of a good position, falling back before them, while arrangements are being made to cut them off.

If a reconnaissance in force has for its object the discovery of the opposing general's plan of campaign, his points of concentration, lines of operation, etc., it has a wider sphere of action.

A good example is furnished by General Gourko's reconnaissance in force over the Balkans in July, 1878. On the 30th June, three days after the passage of the VIIIth Russian Army Corps over the Danube, the Grand Duke Nicholas gave orders for a reconnaissance in force, under General Gourko, to be pushed forward to Tirnova and Selvi. Subsequent orders were given to Gourko to gain possession of a pass in the Balkans by which the army could cross.

At the same time, Gourko was to send his cavalry forward south of the Balkans to cut the railroads and telegraph, and gain as much information as possible regarding the numbers, movements, and disposition of the Turks. A force of 14,000 men was placed at Gourko's disposal, composed of $10\frac{1}{2}$ battalions of infantry, 32 squadrons of cavalry, and 32 guns, including two mountain batteries.

Starting from Tirnova at the head of his flying column, on July 12th, in eight days Gourko gained possession of three passes in the Balkans having overcome the most extraordinary obstacles, the difficulties of the road rendering it necessary for the guns to be dragged by infantry for a distance of several miles. Debouched into the valley of the Tundja, Gourko dispersed various bodies of regular Turkish troops, disarmed the populace and raided the country.

After capturing the Shipka Pass from its southern outlet, on the 19th July, between that date and the 5th of August General Gourko's cavalry carried panic into the heart of Turkey, destroyed portions of the railroad and telegraph on the principal lines, gathered accurate information concerning the strength and positions of the Turkish forces advancing towards the Balkans, and finally, when directed to fall back (owing to events on the north side of the Balkans), Gourko covered his retreat with his cavalry in presence of an army three times as numerous as his own force.

During these operations, however, the Russian commander committed the grave error of dividing his force, an error which nearly cost him his infantry.

A full and interesting account of this brilliant reconnaissance is given by Lieutenant Greene, U.S. Army, in his valuable work on the Russian and Turkish War 1877-78.

When a reconnaissance in force is composed of cavalry and artillery only, greater latitude may be given to its commander. A good example was afforded during the American War, and is mentioned in Colonel Denison's *Modern Cavalry*: "General Stuart, of the Confederate army, made a magnificent armed reconnaissance in front of Richmond in 1862, by which he gained information as to the position of the enemy's lines, which enabled General Stonewall Jackson, a few days afterwards, to fall upon the flank and rear of General M'Clellan's army with confidence and effect." This reconnaissance, its object being attained, afterwards assumed the character of a raid. General Stuart, with his cavalry and artillery made a complete circuit round the Federal army, passing by their left flank along the rear, and returning by their right flank, cutting in all directions the Federal communications, burning and destroying a large amount of property, and capturing a number of horses. He showed that a bold cavalry leader may sweep completely round an enemy's position, while a less daring commander, haggling for information, and timidly engaging his light troops, may discover nothing.

Reconnoitring Parties are moving parties sent out from the "main body" of a force, whether stationary or advancing, in order to gain information about the enemy, whether in the immediate front or at a distance. They often precede advanced guards, whilst at other times they are employed independently to gain information beyond the sphere of advanced guards or outposts. Reconnoitring parties do not conform to the movements of the main body. They endeavour to supply the information on which the movements and dispositions of the main body will depend. They are not intended to fight.

The *general instructions* given to the commander of a reconnoitring party, whether composed of cavalry or infantry, would be: Reconnoitre the country along such and such a road, or between such and such roads, note carefully the general features of the ground, question the inhabitants, correct your map and obtain all the information you can about the enemy. The special instructions for a *cavalry party* would probably be: Avoid all engagements as far as possible, unless with inferior bodies of the enemy's cavalry. The special instructions for an *infantry party* are: Avoid as much as possible engagements with enemy's infantry, but push back any parties of his cavalry you meet with.

A reconnoitring party may consist of a party of 10 or 12 men, a squadron, a company, or a squadron and company combined. When cavalry and infantry are acting together, the infantry hold defiles, bridges, or villages, in order to protect the retreat of the cavalry, who are thus enabled to act with greater boldness in a difficult country.

The formation of all patrols, whether cavalry or infantry, is the same, the distances being altered to suit the superior mobility of cavalry. As a general rule, cavalry distances may be taken as treble those of infantry.

The principle is to push forward small bodies towards the enemy with stronger bodies in rear, and is based entirely on that of an ordinary advanced guard preceding a battalion. The commander of a reconnoitring party should omit no precaution to guard against being cut off, or surprised, and should endeavour to gain his information by stealth, only using force when absolutely necessary.

The following passage, quoted from "War Correspondence of the *Daily News*," gives as good an idea of patrolling work, perhaps, as it is possible to get from mere description:—

"On the afternoon of the 27th June, 1877, Sistova was occupied. A detachment of Cossacks wound up the glen of the Tekir-Dere stream, at the mouth of which was the landing place. It then inclined to the right, scouting along the footpaths, among the fields and gardens, pushing its way cautiously along. The strongest detachments crept cautiously westward on Sistova. The leading files first peered into the shattered earth-works, where two dismounted field guns were found, and then gradually felt their way into the town, peering round the corners of the streets, and patrolling onward by twos and threes, until, with infinite patient circumspection, they had gone through the whole place."

Although the information brought back by a single patrol may be little, it must be borne in mind that a general would probably send out a dozen patrols in different directions, and the budget of information thus obtained may be very complete.

After a victory, especially in bad weather, cavalry patrols should be sent along all the roads to discover what line of retreat the enemy has taken.

General Hamley points out that a reconnaissance made on every road after the battle of Ligny would have saved Napoleon at Waterloo, which battle he fought under the impression that the Prussians were routed and closely pursued by Grouchy. But Grouchy pursuing with 20,000 troops mistook the road, so that Blucher appeared on the field of Waterloo with 60,000 fresh troops, and fell upon the right flank of the French.

Again, General Hamley points out how Wellington,

pursuing a wrong road under a false impression, failed to gather the proper fruits of the victory of Salamanca. The Prussians, after the battle of Wörth in which they completely routed the French, failing to send out reconnoitring patrols, lost touch with their defeated opponents, and did not know, next day, even in what direction the French had retreated.

No officer should ever start on a reconnaissance of any sort without the best map procurable, or at least a rough sketch of one; and as he goes along he should compare it with the country and note errors, making any additions he thinks likely to be useful.

Colonel Denison relates how, on the map used by General Lee before Richmond, there was an inaccuracy which, in spite of the careful reconnaissances he had made, was never corrected. There existed two roads, one called the Quaker Road, the other had no name. On General Lee's map the latter road was wrongly marked as the Quaker Road. General Lee, making his plans by this map, ordered Magruder to march by the Quaker Road to a certain position. General Magruder was conducted at night by his guide by the real Quaker Road, and found out his mistake too late to be of service at one of the most critical junctures of that memorable series of battles.

Secret, or Individual Reconnaissances are conducted by stealth, and are generally devoted to one or the other of the following objects:—

1. To discover the enemy's whereabouts, numbers, and movements.
2. To report upon a position occupied by an enemy.
3. To make a military survey of the country in which an army is operating.

It requires experience, study and presence of mind to perform these duties satisfactorily.

As an instance of the sort of enterprise required for the first class of secret reconnaissance, Colonel Denison relates the following anecdote:—Before the battle of Königgrätz, a Prussian officer, reconnoitring, left his escort of two troopers hidden in a safe place, as near to the Austrian outposts as he deemed it advisable to approach on horseback, and thence proceeded alone on foot. Not being challenged, he passed through the Austrian outposts, and had actually entered the fortress before his uniform attracted attention. When made prisoner, and taken before the Austrian commandant, he said he had come to summon the garrison to surrender, as the Prussians would shortly be in a position to bombard the town. This proposition, after solemn deliberation, was refused, and the Prussian officer, who expected nothing else, having meanwhile obtained a great deal of important information, was conducted with all ceremony by his guileless foe back through the Austrian outposts.

As might be expected, troops who were capable of being tricked in this way were not led by generals who had any knowledge of reconnaissance; and that will probably explain Marshal Benedek's corresponding ignorance of the Prussian movements. Before the battle of Königgrätz, any Austrian officer lying hidden in a fir-wood, which was close to the position, could have counted every battalion and squadron that the Crown Prince of Prussia moved towards Miletin on the Austrian right flank, and a knowledge of "Spaces and Time" (*see* Chapter III.) would have enabled him to estimate their strength. In making a reconnaissance to find out and report upon an enemy's movements and numbers, a knowledge of the rate of marching and the space occupied by the different arms is indispensable.

An enemy encamped or bivouacked in rear of the position he intends to fight on will cover that position by his outposts, and will take steps to ensure that all the approaches to that position are carefully guarded; but still there are means by which an officer, employed on secret reconnaissance, can get much closer than would appear possible. It is to be remembered that sentries are stationary: only the patrols moving in front of them will have to be avoided; and in the dark this is not difficult. Having concealed himself under cover of darkness, an officer can wait for daybreak and then gather a deal of information about the outposts and what is going on in his immediate front. He may sometimes elude the outposts or break through them under cover of a reconnaissance in force, and be able to reconnoitre the enemy's main position, and report upon it, whether fortified, where the most resistance is likely to be met with, the best lines of approach for direct and for flank attacks, and positions for batteries accompanying them, impassable ground, position of reserves, whether position can be turned. Napoleon always made great use of the information he obtained by secret reconnaissances. Information about the enemy may be obtained (1) By observation of his troops; for this purpose every point of vantage should be occupied. (2) By the traces he leaves; bivouack fires, dust, smoke in villages, tracks on roads, deserted camps, etc. (3) Questioning inhabitants. The data on which calculations are based must always be furnished, due allowance being made for the appearance of roads, fords, etc., in wet and fine weather.

No hard and fast rules can be laid down for the guidance of soldiers employed on these duties; but a thorough knowledge of the principles of tactics is absolutely necessary. Sportsmen are generally men of

resource, and have acquired a quick eye for country; an officer should endeavour to select his escort from men of this class, and take them completely into his confidence. The safety of the report must be carefully provided for in case of accident. The report should be framed as clearly and concisely as circumstances permit. Places marked on the map or sketch should be mentioned in the report, and the *data* on which calculations are based must always be given, due allowance being made for the appearance of roads, fords, etc., in wet and fine weather.

The third object of individual reconnaissance is to obtain a military survey of the seat of war, or the country immediately surrounding an army in the field. So important a duty would usually be entrusted to a specially selected staff or engineer officer; but, nevertheless, any officer or non-commissioned officer may be called upon to perform, or help to perform, such duty.

A military survey is a map of country made expressly with a view to give the information required for military purposes. Ordinary maps do not supply the information required by the commander of a force, who wishes to take advantage of the accidents of ground and whatever cover may be obtainable. Owing to the increased accuracy of modern firearms "cover," even for a few companies, is often of the utmost importance.

In a military survey the following are the principle points to be noted:—

I.—Surface of the country, close or open, situation of suitable camping-grounds, and ground for artillery positions. Mountainous, hilly, or wooded?

II.—Roads, state of repair, width, appearance in wet or dry weather. Lateral roads, where do they branch off and lead to?

III.—Towns and villages, construction of houses and situation of principal buildings.

IV.—Rivers and streams, their depth, breadth, current, command of banks, approaches, fords, bottom, tributary streams, bridges, boats. Easy and difficult crossing places, islands.

V.—Railways, rolling-stock, staff of employés, etc.

VI.—Supplies, probable amount procurable on requisition.

Reports.

The following are some of the most important points to be remembered by the officer in command of any scouting party, in framing and transmitting his reports:—

If verbal, the bearer must be made to repeat it once or twice distinctly before he rides away. If written, it must be legible, concise and clear; distinction drawn between what is certain, and what is supposed or inferred. Reports should be numbered consecutively; place, date, hour, minute and signature. The data on which all calculations are based must be given. Names of places and people should be printed. The words right and left only apply to banks of rivers looking down stream; on all other occasions the points of the compass are to be employed.

The authority for a rumour is always to be quoted. Whenever necessary, to make a report clearer, a sketch may be added to it. Place, date, time of despatch and pace should be written on the cover, and the *receiver*, having first signed his name and filled in the date, time and place he is at, will return it to the bearer as a receipt.

In sending reports, regard must be paid to their importance. As regards pace, X means trot and walk, XX trot the whole way, XXX as fast as possible.

Scouting.

According to Colonel Shaw, of cavalry scouts there are two kinds: the squadron scout, employed for the sole purpose of testing the practicability of the ground for his squadron, and the scout detached from a patrol or reconnoitring party.

Of infantry scouts there are two kinds: the marksman sent out in advance of the fighting line, to select cover and to pick off officers, and the ordinary reconnoitring scout detached from a patrol.

Scouts, therefore, in reference to reconnoitring, are men or files detached from patrols.

General Wolseley defines a "scouting party" as a party detached from the patrols comprising the cavalry-screen. ("Soldiers' Pocket Book," p. 315.)

The mission of a scouting party is, therefore, to perform in detail the duties entrusted generally to the body from which it is detached, and the conduct of such a party may safely be regulated by the directions laid down for reconnoitring patrols.

The considerations that regulate the strength of a scouting party are:—

I. The number of scouts it has to furnish.

II. The resistance it is supposed to offer.

Test Questions.

On Advanced Cavalry and Reconnoitring Duties.

I. What is the general formation of the cavalry divisions preceding the march of an army in the field? 1st in an open country, 2nd in a moderately enclosed country.

II. An army composed of several divisions is advancing on several roads: to what part of the cavalry of the army would belong the duty of screening its movements and obtaining information of the enemy?

III. What considerations influence a commander when sending out a reconnoitring party, with regard to its composition and strength?

IV. What is a reconnoitring party? What is the difference between a reconnoitring patrol, and a party employed on secret reconnaissance duty? State briefly how each proceeds to attain its object.

V. What is the difference between a reconnaissance in force, and a reconnoitring party?

VI. You are ordered to take command of a reconnoitring party of 20 cavalry; what precautions would you take, and in what order would you move off, supposing you were in an average enclosed country?

VII. What considerations regulate the composition and strength of a scouting party?

VIII. In reconnoitring an enemy's position, what are the most important points to notice?

IX. Describe the different methods by which intelligence concerning the enemy may be obtained, and how reports should be framed and transmitted?

X. How does country affect the employment of a cavalry screen?

XI. You are directed to go forward and reconnoitre a certain length of road which the commander of a force may march by the following day. You come to a village, cross two streams (one by a bridge, and one by a ford) and pass for a mile through a wood. In parts the country on each side is hilly. Give the points in connection with each of these features of country which you would notice in your report.

N.B.—The answers in all cases should be full, without being needlessly discursive; intelligence, combined with conciseness, is what is specially commended. When the reply to a question admits of the exercise of individual judgment, the grounds upon which your opinion has been formed should always be stated.

CHAPTER III.

Spaces and Time.

UNDER the heading of Spaces and Time we shall see how to compute the extent of ground which any force may require when deployed for action and when on the march, having regard to the different formations such a force may assume: we shall also deal with questions of time; not only the time occupied in passing from one point to another, but the time necessary to effect changes in the formation of troops of either or of all the three arms. "As time and distance," says General Wolseley, "are the two elements upon which all military movements hinge, officers cannot accustom themselves too much to every-day calculations regarding them.

There are different formulæ for cavalry, artillery and infantry, and for the three arms combined. We will deal first with the cavalry arm, and give the space occupied by a body of cavalry in different formations, the intervals or spaces allowed to prevent crowding, and the pace at which it may move.

Cavalry.

Plate III. shows that a troop of 48 sabres occupies nearly the same depth in fours as it does frontage in line; also, that a half-troop in sections, and a quarter-troop in half-sections, occupy the same depth as a whole troop in fours. It thus appears that the number of sabres occupying a certain frontage or depth of ground can be arrived at if their formation is known.

A horse measures 8 feet from nose to croup, and is allowed a front of one yard. In line, the rear rank is a horse's length from the front rank. Cavalry in line occupy as many yards as there are horses in the front rank; therefore, by doubling the number of yards, you find the number of sabres. Thus, 24 yards of cavalry in line=24 front rank and 24 rear rank, or 48 sabres.

In fours, sections, or half-sections, the space between the rows of horses is half a horse's length, or 4 feet.

Cavalry in fours are 8 abreast, four of the front rank and four of the rear rank wheeled up alongside of them; and in this formation cavalry occupy nearly the same depth in column as front in line. A troop of 48 sabres in fours = 6 sections, or rows, of 8 horses and 5 intervals of half a horse's length, or 4 feet. Thus, $6 \times 8 + 5 \times 4 = 68$ feet and allowing 2 feet in front, and 2 feet behind the column $68 + 4 = 72$ feet, or 24 yards. For purposes of calculation a troop or squadron of cavalry in fours is computed to occupy half a yard per sabre. When the force consists of more than one squadron, and is marching in fours, squadron intervals must be allowed for.

Cavalry in sections are 4 abreast, and occupy double the depth they do in fours (8 abreast). A half-troop of 24 sabres in sections = 6 sections, or rows, of 4 horses. Thus, $6 \times 8 + 5 \times 4$ (intervals) = 68 feet + 4 feet allowed for front and rear of column = 72 feet, or 24 yards, or 1 yard per sabre. Therefore, 24 sabres in sections (4 abreast) occupy the same depth as 48 sabres (8 abreast).

Cavalry in half-sections (2 abreast) occupy twice the depth they do in sections (4 abreast); therefore, cavalry in half-sections occupy two yards per sabre. Thus, 200 yards of cavalry, in half-sections = 100

sabres (2 abreast), in sections = 200 sabres (4 abreast), in fours, allowing for 3 squadron intervals = 328 sabres (8 abreast).

The normal formation of cavalry on the march is sections (4 abreast). This formation leaves room for passing traffic. In crowded streets or narrow roads cavalry marches in half sections (2 abreast).

A cavalry regiment consists of 8 troops. A squadron (96 horses)* = 2 troops. The tactical unit of cavalry is a squadron. Four squadrons form a regiment.

Intervals.—Between squadrons in line or in fours, 12 yards interval is allowed. In sections or half-sections there are no intervals between squadrons. The interval between cavalry regiments is 24 yards, and between cavalry and infantry 25 yards. Intervals are weaknesses, but in line and in close formations, such as cavalry fours, the tendency is to crowd; to avoid this the lesser of two evils is adopted by establishing intervals between units. In the weaker formations (sections and half sections) the tendency is to slag out; therefore, no intervals are deemed necessary. The fact is noticeable that, even with infantry, the moment "two deep" is formed the men begin to lose their distances. In going into church, men are generally cautioned to close up before they have gone many yards in two-deep formation.

Pace.—4 miles an hour at a walk.

$$\frac{7040}{60} = 117\tfrac{1}{3} \text{ yards per minute.}$$

8 miles an hour at a trot

$$1760 \times 8 = 14{,}080 \text{ yards an hour.}$$

$$\frac{14{,}080}{60} = 234\tfrac{2}{3}, \text{ or } 235 \text{ yards per minute.}$$

* War strength 150 sabres.

Infantry.

To find the front occupied by a battalion in line, reckon that each man in front rank occupies a pace of 30 inches; and, in addition, allow for two guides per company, and two officers and a colour sergeant for colour party, Thus a battalion of eight companies of 100 rank and file, each in line, requires one pace, or 30 inches, for every front rank man, + 19 paces for guides and colour party = 419 paces = $349\frac{1}{6}$ yards. Infantry occupy the same depth in fours as they do front in line; therefore a battalion in fours (800 rank and file) with colours stretches $349\frac{1}{6}$ yards. Infantry in fours are computed to occupy 15 inches per man. All measurements in tactics are expressed in yards.

In column, each company is placed at a distance equal to its own breadth from the one immediately in front of it, measuring from the heels of the front rank of the one to the heels of the front rank of the other. Consequently, a battalion in column occupies the same extent of ground that it would cover in line, less the front of the leading company, and plus the depth of the rear company (3 yards).

A quarter column is formed with the companies at six paces' distance, measuring as in column, from the heels of the front rank of the one to the heels of the front rank of the other.

A pace is $\frac{5}{6}$ of a yard, hence 5 yards = 6 paces; therefore, to find the depth of a quarter column in yards, multiply the number of spaces between companies by five, and add the depth of the rear company.

Example.—Find the depth of a battalion of 10 companies standing in quarter column.

Ten companies would have 9 intervals, each of 6 paces, or 5 yards taken from heel to heel of front ranks.

$5 \times 9 = 45 + 3$ yards the depth of the rear company = 48 yards.

Intervals.—Between battalions in line or in column of fours, usually 25 yards (30 paces), between infantry and cavalry 24 yards is generally allowed.

Pace.—3 miles an hour.

$$\frac{5280}{60} = 88 \text{ yards a minute.}$$

Artillery.

Each gun or waggon with 6 horses occupies a depth of 15 yards. The interval between guns in line is 19 yards from muzzle to muzzle. This interval admits of a battery being moved off to the right or left in column of sub-divisions, leaving 4 yards space between each sub-division. A battery in column of route (its normal formation when on the march) consists of 6 guns and 6 waggons, each taking up 15 yards; between each vehicle is a space of 4 yards; hence a battery in column of route occupies $15 \times 12 + 4 \times 11 = 224$ yards. A battery in line occupies 95 yards, *i.e.*, 5 intervals of 19 yards between each gun; so it follows that the space required for any less number of guns (say 4) may be ascertained by multiplying the number of "intervals"—not guns—by 19. Thus 3×19 gives the space in yards required for 4 guns in line.

The space between half-batteries in column of half-batteries is 23 yards. This space, added to space occupied by the gun in column, admits of the battery being wheeled into line with the proper intervals of 19 yards between the guns: $23 + 15 = 38$, which gives the space required for the 3 guns of the rear half-battery when wheeled into line.

Interval.—Between batteries 28½ yards (*i.e.* a gun interval and a half). Between artillery and the other arms (cavalry or infantry) 25 yards' interval is preserved.

Pace.—Same as cavalry, walk four miles an hour, and trot eight miles an hour.

The Three Arms Combined.

Points to be remembered:—Cavalry in line = as many yards as sabres in front rank. Cavalry in sections (4 abreast) = 1 yard per sabre. Fours (8 abreast) reduces the space occupied to ½ yard per sabre. Half-sections (2 abreast) increases the space occupied to 2 yards per sabre. Cavalry intervals 12 yards between squadrons in line or in fours, 24 yards always between regiments. Between squadrons in sections or half-sections there are no intervals. Pace 117 yards a minute at a walk; 235 yards a minute at a trot.

Infantry occupy 15 inches per man in line, or in fours; in addition 30 inches each must be allowed for company guides and colour party. Interval 25 yards between battalions. Pace 88 yards a minute. Interval between infantry and cavalry 25 yards.

Battery of artillery in column of route = 224 yards; in line = 95 yards. Intervals between guns in line 19 yards; betweeen guns or waggons in column of route 4 yards; between half-batteries in column of half-batteries 23 yards. Between batteries 28½ yards and between guns and the other arms 25 yards. Pace same as cavalry.

Rules for calculating space occupied by the different arms:—

I. Draw out the force in the manner shown in following diagrams.

II. Set down the space occupied by infantry, in paces, above, and by the other arms, in yards, below.

III. Reduce the infantry feet to yards before proceeding with calculation.

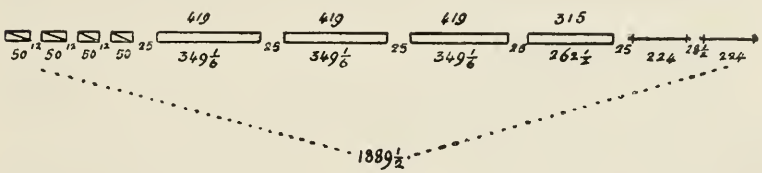
IV. Remember that all calculations of time and space are in yards.

Example.—Calculate the space occupied in line by the following troops :—

1 regiment of cavalry, 400 sabres.

4 battalions of infantry (three 800 strong in 8 companies, and one 600 strong in 6 companies.)

2 batteries of artillery.

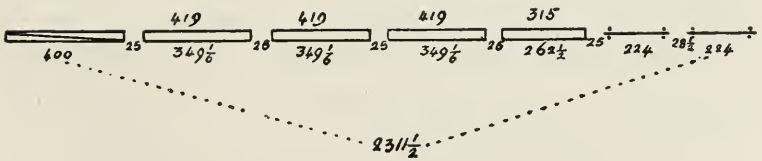


Example.— Calculate the space occupied by the same force in column :—

The cavalry in sections.

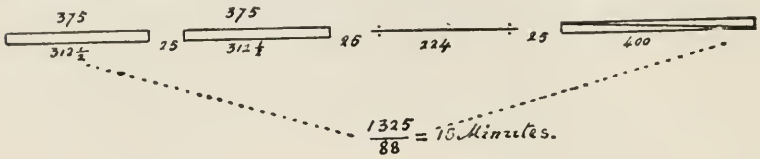
The infantry in fours.

The artillery in column of route.



Example.—A force leaves a barrack square in the following order: 2 battalions in fours (6 companies each 120 strong); 1 battery of artillery in column of route; 1 regiment of cavalry 400 strong in sections. How long will it be before the last trooper moves off the ground—infantry marching 3 miles an hour?

First draw out the force in the order in which it is given, then calculate the number of yards it occupies, and divide the result by 88, which is the number of yards infantry cover per minute.



Time Calculations.

To calculate the number of troops on the march, it is necessary to note what formation they are in, and to time the different arms passing a tree, a house, or bend in the road.

Artillery always march in column of route, *i.e.* 224 yards for a battery. Infantry in fours, *i.e.*, 15 inches per man. Cavalry in half-sections, *i.e.*, 2 yards per sabre (2 abreast); in sections, *i.e.*, 1 yard per sabre (4 abreast); or in fours, *i.e.*, $\frac{1}{2}$ yard per sabre (8 abreast).

Example.—Let us suppose that a body of infantry marching in fours is observed to take ten minutes to pass a tree. As infantry march three miles in an hour, or 88 yards a minute; $88 \times 10 = 880$ yards of infantry in fours; $880 \times \frac{6}{5} = 1{,}056$ paces $= 2{,}112$ men.

This number would represent about 2 battalions; and therefore one interval of 25 yards between the battalions must be deducted.

880—25=855 yards actually occupied.
=1,026 paces=2,052 men.
roughly, two battalions, each 1000 strong.

The rate of marching of mixed troops, *i.e.*, cavalry and infantry, or of all three arms, is regulated by the pace of the infantry, the slowest arm, and is, therefore, always 88 yards a minute.

Example.—A body of cavalry in half-sections winding through a mountainous district takes 25 minutes to pass a bend in the road at a trot. Required the number of sabres.

Cavalry at a trot, 8 miles an hour,=235 yards per minute; $235 \times 25 = 5{,}875$ yards of cavalry in half-sections. Cavalry in half-sections occupy 2 yards per sabre, thus $\frac{5{,}875}{2} = 2{,}937\frac{1}{2}$ sabres or about 7 regiments of 400 each; there would be 6 intervals of 24 yards each to deduct, and $5{,}875 - 144 = 5731$ yards of men in half-sections. The answer is therefore expressed as $\frac{5731}{2} = 2865$ sabres, or 7 regiments of 400 sabres each.

Example.—A division, consisting of 7 battalions of infantry (each 1,000 strong in 8 companies), 1 regiment of cavalry, 3 batteries of artillery, 1 company of engineers (200 strong) is in retreat; the rear-guard (composed of 2 battalions of infantry, 1 squadron of cavalry, 1 battery of artillery, half-company of engineers) occupies a position to hold the enemy in check, while the main body crosses a river 2 miles in rear by a bridge 300 feet long. How long must the rear-guard hold its ground to enable the remainder of the division to take up a position 1,000 yards from the further bank of the river, across the road leading from the bridge? It is supposed that the cavalry of the main body is moving independently to watch a ford about a mile above the bridge. The infantry is marching in quarter column, the artillery in column of route, and there is no advanced guard; the head of the retreating column is within a mile of the bridge when the attack on the rear-guard position commences; the bridge is not wide enough to admit of the infantry marching over it in sections.

Here we shall find, after allowing for the rear-guard and the cavalry, that the retreating column consists of 5 battalions of infantry (1,000 strong each), 2 batteries of artillery, and a half-company of engineers (100 men). A delay at the bridge will be caused while the infantry get from quarter column into fours. The force can deploy on its new ground half to right and half to left, and the rule is that, in such a case, the time occupied in deploying will equal the length of the column + half its length. This rough rule is generally accepted, and it allows a margin for unforseen checks.

As the infantry will have to get into fours to cross the bridge, allow for them in this formation when calculating the length of the column.

Thus $1{,}760 + 100 + 1{,}000 + 2{,}839 + \frac{2839}{2} = 7{,}118$ yards. To traverse this distance at the rate of 3 miles an hour would take 81 minutes; thus it appears that the rear guard must hold out for about an hour and twenty minutes.

Allowing for supernumeraries,

Troops pass a given point in one minute, as follows :—

In quick time, or at a walk—

$211\frac{1}{5}$ infantry in fours.

58 cavalry in half-sections.

116 cavalry in sections.

192 cavalry in fours *

$\frac{1}{2}$ battery artillery, with waggons.

If, however, the whole column can be seen, a very good estimate can quickly be made with the help of a map and allowing

1 yard for every two infantry soldiers.

1 yard for each cavalry soldier.

20 yards for each gun or waggon.

* Allows for one interval of 12 yards between the squadrons, and 9 yards unoccupied at the tail of the column.

An allowance of between $\frac{1}{10}$ and $\frac{1}{5}$ of the total length of the column, varying according to national characteristics, discipline, the state of the roads and weather, must, as a rule, be made for straggling. Under ordinary conditions the allowance made is 10 per cent. for a battalion, 15 per cent. for a division and 20 per cent. for an army corps.

Test Questions.

Time and Space.

I. Assume any probable rate of march, and calculate the time which a force composed of the three arms (strength as below) would take to pass a given point:—

Infantry.—7 Battalions, each 1,000 strong, in fours.

Cavalry.—1 Regiment, 500 strong, in sections.

Artillery.—3 Batteries, with waggons, in column of route.

One sixth should be added to the length of the column to allow for straggling. (Answer one hour.)

II. What is the extent of the front of a battery in line? and what is the space occupied on a road by a battery in column of route? Give your calculations in full.

III. The advanced guard of a division meeting the enemy deploys across the road, and holds him in check until the main body comes up and reinforces it. The enemy now retires, and the march is resumed; calculate the delay in the march which the incident will have caused. N.B.—The advanced guard consists of $3\frac{1}{2}$ squadrons and 1 machine

gun; 100 mounted infantry and one machine gun; ½ company R.E.; 1 battery R.A.; 2 battalions infantry and 1 machine gun. The head of reserve of advanced guard is 3 miles in front of the main column. (Answer, about two hours.)

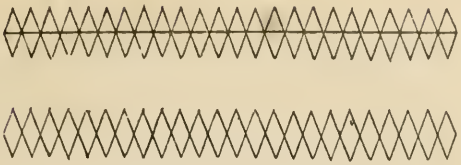
IV. If 500 troopers march along a road and take $4\frac{1}{3}$ minutes to pass a given point, what formation are they in? In what formation would they be if, at the trot, they took the same time to pass? Answer: (1) Sections, (2) Half-sections.

V. Give a rough practical rule for computing the space occupied by troops on the line of march.

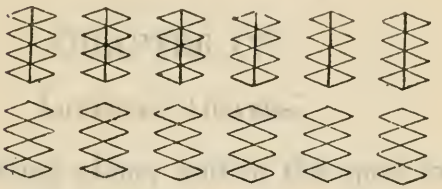
VI. A force consisting of six battalions of infantry (eight companies each 100 strong), six squadrons of cavalry (each forty-eight files), and three batteries of artillery, commences its march at 4 a.m. to reach a position seven miles distant; at what hour will the last gun arrive on the ground? N.B.—The infantry march in fours, cavalry in sections, artillery in column of route. The advanced and rear guards are furnished by other troops. (Answer, 7 a.m.)

VII. What front will be occupied by á force consisting of seven battalions of infantry (six companies each 100 strong), three batteries of artillery, four squadrons of cavalry (120 sabres each) drawn up in the following order: Cavalry on the right, in line. Infantry in the centre, in line of quarter-columns. Artillery on the left, in line of columns of half-batteries? (Answer, $949\frac{1}{2}$ yards.)

SPACES OCCUPIED BY TROOPS IN VARIOUS FORMATIONS.



48 Sabres in Line, 24 Yards.



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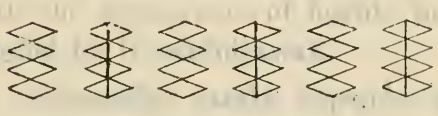
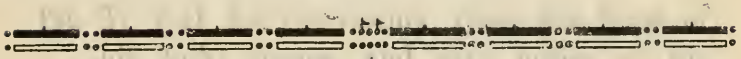
48 Sabres in Fours, 22⅔ Yards.

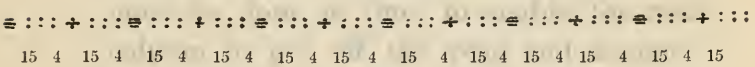


24 Sabres in Sections, 22⅔ Yards.

12 Sabres in Half-Sections, 22⅔ Yards.



A Battalion, 800 Rank and File, in Line, 349⅛ Yards.



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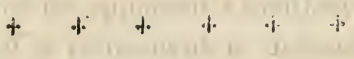
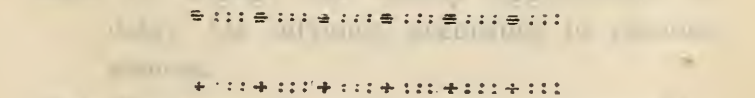
Battery in Column of Route, 224 Yards.

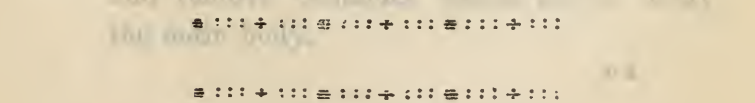


19 19 19 19 19

Battery in Line for Action, 95 Yards.



Battery in Column of Sub-divisions, 110 Yards.



Battery in Column of Sections, 110 Yards.

PLATE III.

SPACES OCCUPIED BY TROOPS IN VARIOUS FORMATIONS.

CHAPTER IV.

Advanced Guards.

CAVALRY acting alone, and in the open formation best adapted for screening duties, is especially vulnerable; being liable to be driven in, or out-flanked and cut off, while the appearance of hostile infantry is generally the signal for its withdrawal.

A cautious commander rarely depends upon his cavalry screen entirely for protection from surprise; but will cover the immediate front of each of his columns with its own advanced guard.

The duties of advanced guards are:—

1st. To feel for the enemy, clear the front of his light troops, and give notice of his *presence* in any considerable force. This must be done in time to enable the main column to get off the road and assume a fighting formation before it comes within range of its opponent's artillery, or to withdraw, if a retirement is deemed necessary, to a suitable position.

2nd. To engage the enemy aggressively or delay his advance, according to circumstances.

3rd. To reconnoitre the country thoroughly, and remove obstacles which might delay the main body.

The strength of an advanced guard depends on the strength of the force it is covering, the character of the enemy, and the nature of its intended operations. It should rarely be more than one-fourth, or less than one-eighth, of the whole force.

The strength and composition of suitable advanced guards, under ordinary conditions, have been roughly laid down, by authority, for the following bodies:—

(1) A division.
(2) A mixed brigade of all arms.
(3) A brigade of infantry.
(4) A battalion of infantry.

A Division.	Advanced Guard.
Consisting of—	
1 regiment of cavalry and 1 machine gun.	3½ squadrons of cavalry and 1 machine gun.
Detachment of mounted infantry (100 men) and 1 machine gun.	The detachment of mounted infantry and its machine gun.
1 company royal engineers.	½ company of engineers.
3 or 4 batteries of field artillery.	1 battery of artillery.
2 brigades of infantry (8 battalions), with 4 machine guns.	2 battalions of infantry and 1 machine gun.
Bearer company.	½ company of bearers.
1 infantry and artillery reserve.	Infantry reserve ammunition.
Ammunition column.	
Departments and staff.	
1 troop military police.	

A Mixed Brigade.	Advanced Guard.
Consisting of—	
1 cavalry regiment with 1 machine gun.	3½ squadrons of cavalry with 1 machine gun.
3 or 4 battalions of infantry with 2 machine guns.	½ battalion of infantry with 1 machine gun.
Detachment of mounted infantry with 1 machine gun.	Detachment of mounted infantry with 1 machine gun.
1 battery R.H.A.	1 section R.H.A.
1 battery R.A.	½ company engineers.
1 company engineers.	Section of bearer company.
Ammunition column.	
Bearer company, departments, and staff.	

A Brigade of Infantry.	Advanced Guard.
3 or 4 battalions and 2 machine guns.	4 companies and 2 machine guns.
Bearer company, ammunition column, and departments.	

A Battalion of Infantry.	Advanced Guard.
8 companies with regimental transport	1 or 2 companies.

For the advanced guard of a brigade or regiment of cavalry, *vide* Plate XX.

The advanced guard of a division is illustrated in Plate IV.

The distance preserved between an advanced guard and the main body it covers depends on the nature of the country and the time required by the main body to deploy.

A division usually requires about an hour's warning to advance or retire to suitable ground and deploy.

An army corps numbers about 35,000 men of all arms, and, with its trains, baggage, etc., occupies about 23 miles of road. It represents the maximum number of troops that ought ever to march in one column. The advanced guard of an army corps, when composed of the three arms, is usually pushed forward about a day's march.

The composition of an advanced guard depends on the nature of its intended operations and the character of the country. The proportion of mounted troops should be large, and whenever possible it should be composed of all arms. Mounted infantry may, in exceptional circumstances, scout in front of the vanguard and enable the cavalry to march in a compact body ready for action.

Distribution of Advanced Guards.

I. Vanguard, including all scouting troops.

II. Reserve.

The *vanguard* is composed of cavalry, mounted infantry, infantry, and sappers; artillery is sometimes added. Machine guns and a few cyclists are now

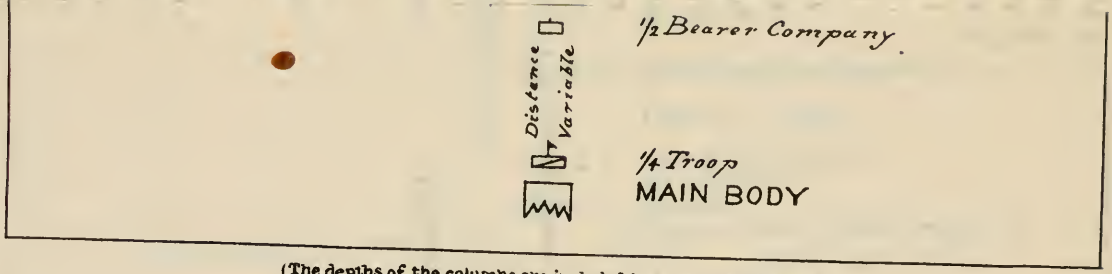
added to the troops comprising the advanced guard, and should be placed well forward. As every delay of the advanced guard entails a corresponding halt of the main column, than which nothing is more vexatious, the commander of the advanced guard must be prepared to perform his reconnoitring duties not only well but quickly. Cavalry should lead the vanguard, because they can see further than infantry, and because cavalry can examine places off the road, and rejoin the party in time to prevent an unnecessary halt. The cavalry of the vanguard should therefore act boldly ; but as it may be stopped by defiles, roads, villages, or steep heights not easily accessible to mounted troops, or by the presence of hostile infantry, infantry should be close enough to afford support and render prompt assistance if required. Of course, the advanced guard must be halted while such places are reconnoitred or cleared of an enemy by infantry.

The distance between the vanguard and the reserve of the advanced guard should be sufficient to admit of the latter deploying or making other arrangements for defence, before the vanguard can be driven back.

The mounted scouts covering the front of the vanguard may be as much as two miles ahead of it. The front they can scout over will, of course, vary with the country and the number of men employed.

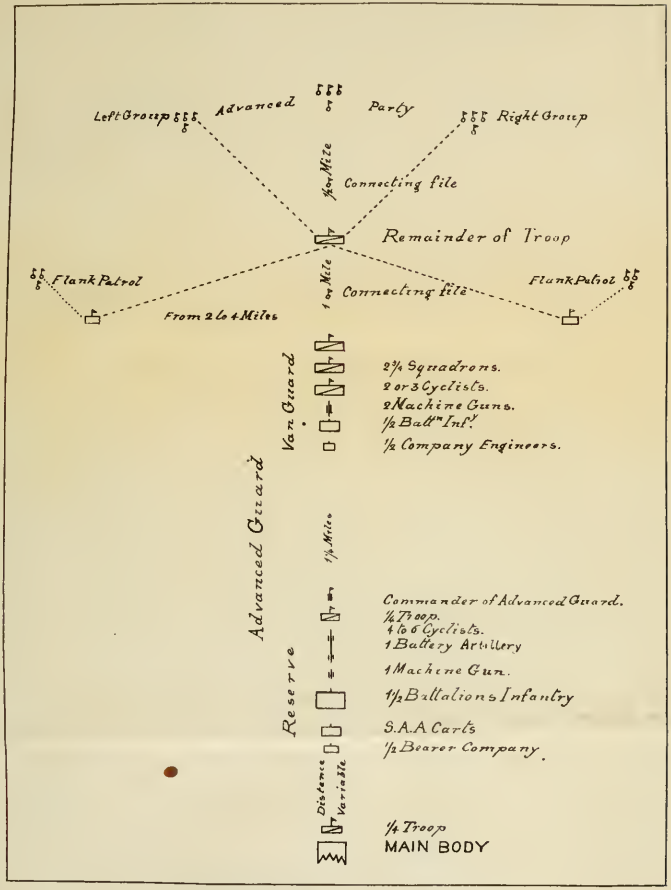
The reserve of the advanced guard will move at a distance of from about 1,000 to 3,300 yards from the head of the main portion of the vanguard, the distance varying with the strength of the advanced guard, and the country.

The *reserve* of an advanced guard is led by a detachment of cavalry sufficient to protect its guns. The artillery marches as near the head of the column as is compatible with safety when limbered up and on a



(The depths of the columns are included in the above distances.)

ADVANCED GUARD OF A DIVISION.



(The depths of the columns are included in the above distances.)

ADVANCED GUARD OF A DIVISION.

road. Behind the guns marches the remainder of the infantry, machine guns, and ambulance.

Artillery ammunition waggons only accompany large advanced guards, and after an action the limbers should fill up before advancing. "The action of the artillery of an advanced guard will depend upon the object to be attained: if the enemy in small force has to be driven from a position, the artillery should come into action at once at a decisive range; if the object of the advanced guard is to delay the enemy until the main body it is covering can come up, the artillery will open fire as soon as the enemy is visible. Batteries required for advanced guards should be taken from the corps artillery." *

An advanced guard distributed on these principles guards its own flanks and offers the smallest target to an enemy lying in ambush. Small bodies pushed forward with stronger bodies in rear can be quickly and effectively reinforced; and if driven back, they can retire on the main body deployed to cover their retreat.

Small detachments of hostile troops must be driven back in order to discover what is behind them; but to what extent an advanced guard commander should engage an enemy who is in superior force must depend on his orders. There are at least three courses open to him, viz.:—

1. Attack without halting; send cavalry to reconnoitre widely and boldly on the flanks; and, aided by artillery fire, advance with infantry in attack formation.
2. Take up a defensive position and hold the enemy in check until reinforced from the main column.
3. Retire slowly, fighting, on the main column.

* Field Artillery Drill, 1889.

PLATE IV.

road. Behind the guns marches the remainder of the infantry, machine guns, and ambulance.

Artillery ammunition waggons only accompany large advanced guards, and after an action the limbers should fill up before advancing. "The action of the artillery of an advanced guard will depend upon the object to be attained: if the enemy in small force has to be driven from a position, the artillery should come into action at once at a decisive range; if the object of the advanced guard is to delay the enemy until the main body it is covering can come up, the artillery will open fire as soon as the enemy is visible. Batteries required for advanced guards should be taken from the corps artillery." *

An advanced guard distributed on these principles guards its own flanks and offers the smallest target to an enemy lying in ambush. Small bodies pushed forward with stronger bodies in rear can be quickly and effectively reinforced; and if driven back, they can retire on the main body deployed to cover their retreat.

Small detachments of hostile troops must be driven back in order to discover what is behind them; but to what extent an advanced guard commander should engage an enemy who is in superior force must depend on his orders. There are at least three courses open to him, viz.:—

1. Attack without halting; send cavalry to reconnoitre widely and boldly on the flanks; and, aided by artillery fire, advance with infantry in attack formation.
2. Take up a defensive position and hold the enemy in check until reinforced from the main column.
3. Retire slowly, fighting, on the main column.

* Field Artillery Drill, 1889.

Under all circumstances constant communication must be kept up between an advanced guard and the main column it is covering, either by telegraph, signallers, mounted orderlies, or a chain of connecting files.

On approaching a village, an advanced guard must proceed with great caution if feeling for an enemy. The advanced party and the reserve on the road must be halted at a considerable distance from the village, while strong flanking parties are sent round the outskirts to threaten the rear. A small portion of the advanced party on the road may then move on, in single files, with considerable intervals between them, followed by the rest of the advanced party as may be deemed expedient; the main body will move forward only when it has been ascertained that the place is not in the occupation of the enemy.

The head of an advanced guard must never enter a mountain pass without previously occupying the heights or either side by flanking parties. As a rule, the flanks of all objects capable of affording concealment to an enemy will be turned, and the rear threatened before the front is approached.

On coming to a hill, the flank files will first move in both directions round the base; a leading file will then ascend, to make its observations from behind the brow of the hill, and to signal to the rest of the party whether the enemy is in sight or not.

It sometimes happens that when an important and distant point, such as a bridge or a railway junction, has to be secured, an advanced guard is composed entirely of cavalry.

When war was declared by Russia, on the 24th April, 1877, and the various corps mobilized and concentrated on the frontier near Kishineff proceeded to cross

in three columns, the Russian plan of campaign necessitated the seizure of the railway-bridge at the mouth of the River Sereth.

On the very morning of the day when war was declared against the Turks, General Radetsky crossed the frontier at the village of Bestomak, and the same evening his advanced guard—consisting of XIth Cavalry Division, Caucasian Brigade, one regiment of Don Cossacks, and all the mountain-guns—after a ride of sixty-five miles, reached the Sereth River, and took possession of the railway-bridge near Galatz, on the Danube.

This seems a daring feat, but we must remember that the Russian cavalry, at that date, was armed with the short Berdun rifle and bayonet, a weapon almost equal to any rifle the Turks possessed; General Radetsky therefore considered that his advanced guard was capable of holding its own against whatever Turkish troops they might encounter. Indeed, on several occasions during this war, Russian cavalry, dismounted, successfully attacked Turkish infantry.

History repeats itself; and dismounted dragoons are likely to play a great *rôle* in the campaigns of the future. In continental armies it seems to be the accepted opinion that dragoons are more serviceable and less expensive in the long run than mounted infantry.

At the risk of seeming to recapitulate, the author may point out how the foregoing remarks upon advanced guards are illustrated in Plate V. A force on the march has told off an advanced guard, consisting of one squadron of cavalry, one battalion of infantry, and half a battery of field artillery without waggons.

The advanced guard is marched off in the following order—A few scouts, followed at a distance of 500 yards

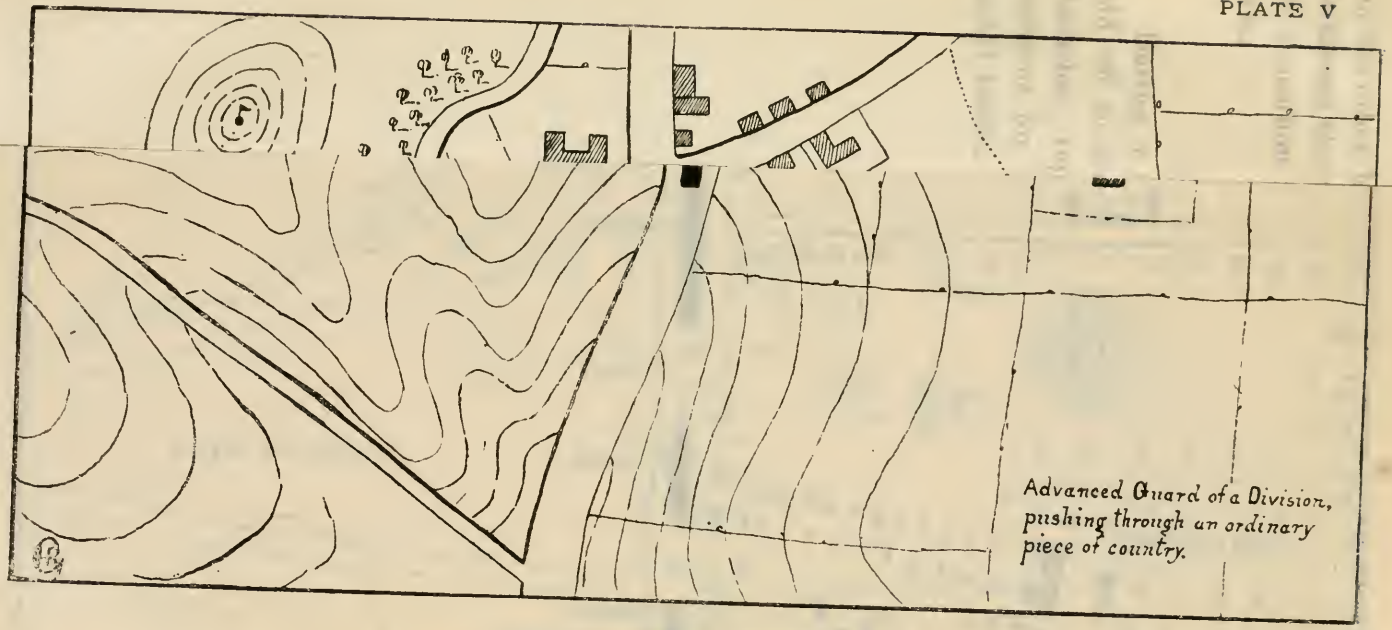
by an officer's patrol, consisting of half a troop, supported by the remainder of the squadron and by two companies of infantry. The above troops constitute the "vanguard." The reserve of the advanced guard, consisting of two companies of infantry, followed by the guns and the remainder of the battalion, follows with an interval of about a quarter of a mile.

It may be noticed that the space occupied by the advanced guard, from the scouts of its vanguard to the leading infantry of its reserve, is about 1,600 yards; such a distance ought to ensure the reserve against surprise.

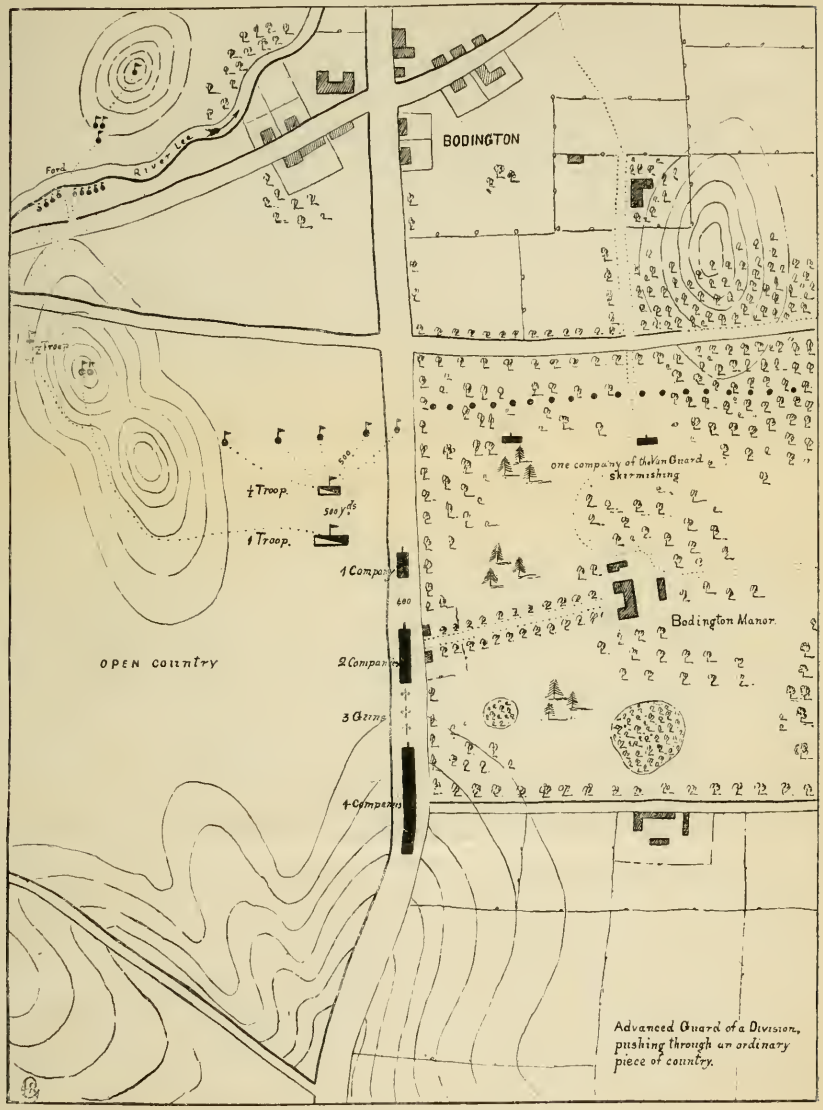
The advanced guard has descended from a hilly piece of country to a portion comparatively flat.

On the left the ground is open; on the right is "Bodington Manor," a country mansion situated in an extensive park. To examine this park, infantry have been employed as skirmishers. On the left there are heights, but they are accessible to cavalry, and therefore cavalry is employed to crown them, and to move round their outer base, in order to turn the flank of any enemy concealed behind them. The cavalry accomplish this very quickly, and moving onwards, cross two roads which intersect the main road and reach the river Lee. They discover a ford, cross the river, and even push on their scouts to crown a hill which skirts the village of Bodington. From this hill the village can doubtless be overlooked, and news of the presence of an enemy there could be rapidly conveyed to the commander of the advanced guard, who is, with his main body, from two to three miles in rear.

Thus we see the advantage of employing cavalry whenever the ground enables the superior mobility and power of vision of a horseman to be made use of;



ADVANCED GUARD.—ENEMY NEAR.



ADVANCED GUARD. ENEMY NEAR.

on the other hand, it is infantry who must be relied on to thread the mazes of a wood, and turn the enemy out of a position from which he could defy the mounted arm.

Advanced Guard in Retreat.

During a retreat a small advanced guard should be told off to reconnoitre the country, clear the road of obstacles, repair bridges, etc., and select suitable positions for the main body in which to bivouac or accept battle.

BODINGTON

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CHAPTER V.

Outposts.

THE principles on which outpost duties are based are simple and easily defined; but the conditions under which these principles have to be applied are so entirely dependent on circumstances as to forbid any detailed rules being laid down, for fear that the too strict observance of them might hinder the prompt and independent action which officers and men on outpost duty are called upon to exercise.

The probabilities are that no two men look upon a piece of country from quite the same point of view, and the importance of a post is often over-rated by the individual who is actually responsible for its safety. Hence, one of the greatest dangers to be guarded against is the subordination of the general aim and object in view to the local possibilities of certain portions of the general outpost line.

After reconnoitring the ground, the first thing to impress upon the troops furnishing the outposts is their mission.

Normally, the mission of outposts is—(1) To obtain information regarding the strength and movements of the enemy; (2) To prevent the enemy obtaining information on these points; (3) To prevent the enemy getting within artillery range of the position they are covering until the troops they are guarding (termed the main body) have had time to get under arms, march to, and satisfactorily occupy, their respective stations. When the main body has occupied

the position, and is ready to give battle, the sooner the outposts are withdrawn the better, as their presence, while clouding the fire of the troops told off for the defence, does not materially aid them to repel the attack.

Outposts, if attacked, are nearly certain to be greatly out-numbered, and any protracted resistance is an unnecessary sacrifice of life; but outposts must at all times endeavour to discriminate between a general advance of the enemy to attack, and a feint, or reconnaissance in force, when it would be their duty to prevent the enemy gaining information. They should only retire before rapidly-increasing numbers, which would indicate that the enemy was being briskly reinforced, and might turn his operations into a real attack supported by his main body.

It sometimes happens that, for strategical purposes, or owing to unforseen circumstances—such, for instance, as the unexpected reinforcement of the enemy's main body — the commander of an army may deem it expedient to retire without giving battle. In such an event the outposts might be called upon to make a determined and prolonged resistance; but they would then virtually become a rear-guard, and their tactics would be no longer those of outposts.

Distance of Main Resistance-line from the Position the Outposts are covering.

Except under the abnormal circumstance of a column being cut off from its base and liable to be attacked on all sides—what the French call "a column in the air"—outposts cover the front, and overlap the exposed flank or flanks of the position they are protecting.

If the main resistance-line of the outposts is about $2\frac{1}{2}$ miles from the position, outposts retiring must be driven over 1 mile of country before the enemy can

get within shelling range of its defenders. One mile properly defended ought, under ordinary circumstances, to ensure about an hour's delay, and the supposition is that in the meantime the general in the rear will have got his main body into fighting order.

If a longer delay is necessary, the outposts may be strengthened, but should rarely be further advanced. To retreat for more than a mile fighting against vastly superior numbers, even with highly trained and disciplined troops, is a dangerous and difficult operation.* Outposts should rarely exceed about one-fifth of the whole force, in order that they may afford rest as well as security to the force of which they are a portion.

Though one hour's fighting is normally represented by 1 mile, this rule will vary considerably with the nature of the country that the outposts must retire over. If favourable for defence, half a mile may be sufficient to gain an hour's delay; but owing to the difficulty of withdrawing all portions of the outpost line in concert, and to the danger of fractions being cut off, outposts should rarely be posted more than $2\frac{1}{2}$ miles away from the position to be occupied by the main body.

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* N.B.—If, owing to accidents of ground, or any other cause, a commander cannot encamp his troops within an hour's march of all vital parts of his position, it is better for him to bivouac upon his fighting ground, though this entails encumbering it more or less with the impedimenta inseparable from an army, and is generally avoided.

N.B.—Artillery range depends entirely on the country; 3,000 yards (say $1\frac{1}{2}$ miles) may be taken as the effective range of Shrapnel shell under ordinary conditions.

Strength of Outposts.

The following points affect the strength of outposts :—

I. The number employed should never exceed the actual requirements.

II. The configuration and nature of the country.

III. The character and proximity of the enemy.

IV. The strength of the army to be covered, and the number of mounted troops available for reconnoitring in front.

V. Whether, if attacked, the main body is to advance to fight in the position occupied by the outpost line ; or whether it would accept battle in a position in rear. In the former case the outposts must be strengthened, in order to hold the position until the main body comes up.

Details of Outpost Duties.

The "Field Exercise" is so clear and explicit upon outpost duties that any attempt at explanation is superfluous, and the student, if he has not already made himself thoroughly acquainted with the system in all its details, as laid down in the drill book for his guidance, is recommended to do so by a careful study of "Infantry Outposts," in Part VI. of that work. The subject is treated under eleven heads, viz. :—1. General Principles. 2. The reserve. 3. Supports. 4. Piquets. 5. Selection of outpost line. 6. Force to be employed. 7. Composition. 8. Duties of officers. 9. Duties of sentries. 10. General observations. 11. Practising outpost duties.

With reference to "Supports" we learn that—

"Supports should consist of one or more companies of the same battalion that furnishes the piquets. It is not necessary to have a separate support to each piquet. On the contrary, there should be only one support to each group of two or three piquets; but the support should be about equal in strength to the aggregate of the piquets to which it is linked."

Thus, a company of 100 men may furnish two small piquets of 25 each, or one strong one of 50 men, and in either of these cases, "which seem to cover all the piquet requirements of outposts," each piquet would be supported by men of its own company. The confusion inseparable from a change of commanders at the critical time when the outposts become engaged can thus be avoided.

When, however, the "Field Exercise" says that "supports should consist of one or more companies of the battalion that furnishes the piquets," it seems that the advantage secured to a piquet falling back on, or being reinforced by, a support furnished from its own company, under its own officers and non-commissioned officers, has been overlooked.

There used to be three outpost systems.

1. The Cordon System.
2. The Patrol System.
3. The Detached Post or Blockhouse System.

The two former were generally recognized in the English Army, although the last-mentioned was chiefly adopted in Afghanistan.

The cordon system consisted of a chain of sentries furnished by piquets, with supports and sometimes reserves in rear of them, and guarded against

ndividuals stealing through the outpost line unseen; it was applicable only to the day time.

At night the cordon gave place to the patrol system, when the sentries were posted on the roads and main approaches, and their piquets moved up closer to them. The system of outposts now laid down for the army is a combination of all three.

It is a common error to suppose that sentries are always drawn in closer at night; on the contrary, they frequently have to be slightly advanced.

The patrol system is based on the assumption that at night an enemy, in sufficient force to attack, will keep to the roads and main avenues of approach. The intervening country is, however, watched by patrols, who are sent out from the piquets, and also, if necessary, from the supports.

Selection of Outpost Line.

The outpost line should be selected: first, with reference to the position of the main body of the army; secondly, with regard to the approaches to it from the enemy's side. There are two lines:—

I. The line of observation.

II. The line of defence.

In order to secure both observation and defence it is desirable to choose a well-defined line, such as a ridge, or the far edge of a wood, with flanks resting on some natural obstacle.

Positions of the different portions of Outposts.

Sentries.

Piquets, as a general rule, should not provide sentries for more than 800 yards of front, on account of the fatigue entailed in visiting them.

The distance between sentries must entirely depend on the nature of the country; but no more sentries should be posted than are required to command a clear view of all approaches. The extent of front of each sentry-post should seldom exceed 400 yards for infantry and 1000 for cavalry.

When posting his sentries, a piquet-commander, by placing himself in the positions that the sentries will occupy, will be able to judge of their suitableness. Sentries should be placed on high ground so as to command an extensive view to the front and flanks; they should be in connection with neighbouring sentries and with their own piquets, and concealed from the enemy as much as possible, either by the ground or by artificial means. Within the above-mentioned limits, provided no ground between two sentry posts is unseen by both, the fewer sentries employed the better.

Sentries, according to the features of the ground, are posted in pairs or groups. Groups may consist of from three to six men. When groups are used a single sentry may be posted by day. The group system is the same as the Cossack Post system of posting vedettes.

Visiting Patrols.

With young or untried troops, and also in bad weather, sentries are visited hourly by a N. C. O. and two men, termed a visiting patrol, and furnished by the piquet. In their rounds the visiting patrols communicate with the sentries of the piquets on the right and left, thus establishing lateral communication throughout the entire chain of sentries. If a piquet has a front of 800 yards, its two visiting patrols must, during its tour of duty (24 hours), cover about 25 miles, which gives about 12 miles to each.

Reconnoitring Patrols.

In addition to sentries who are stationary and to their visiting patrols, a piquet will furnish small parties called reconnoitring patrols. These patrols, preceded by scouts, are sent out beyond the sentry line to such a distance as may be deemed expedient. Within reasonable limits reconnoitring patrols should push on until they are stopped by the enemy. Mounted troops should, if possible, be detailed for this duty. Mounted troops patrolling under certain conditions, might push on as far as ten miles from the army.

Piquets.

Piquets should not, as a rule, be further than a quarter of a mile from their sentries, and should be near enough to each other to afford mutual support; when extended they should be able to retire on their supports under cover of each other's rifle-fire. It frequently happens that, owing to accidents of ground, the piquet line is the best line of defence. In this case supports reinforce their piquets when seriously attacked; but under ordinary circumstances piquets, having covered the retirement of their sentries and reconnoitring patrols, retire on their supports who, in the meantime, will have extended. Piquets must be careful in retiring to clear the flanks of their supports when thus extended; and in the same way the piquets and supports combined must retire in one general line on the reserves, taking care not to expose a flank nor to close in towards the centre. The whole should then retire straight to the rear until they cloud the fire from the position, or receive orders to clear the front, when they make for the flanks with all possible dispatch.

The "Field Exercise" lays it down that, subject to the limit of a single command, which is taken as 100 men, the strength of a piquet is to be regulated by the number of sentries, &c., it has to furnish, and the amount of resistance it is expected to offer; but units should, as far as possible, be kept intact.

Supports

are posted approximately from 400 to 800 yards in rear of their piquets; their mission is to support them either actively or passively, according to the instructions received and the general line of resistance indicated by the commander of the outposts.

Reserves,

if employed at all, usually consist of from one third to one half of the entire force detailed for outpost duty.

Their mission is (1) to reinforce the supports and piquets when they are unable to offer the required amount of resistance; and (2) as compact bodies of fresh troops well in hand, to afford rallying points for those in front, and at all times connect them with the main body they are covering.

In exceptional circumstances—if, for instance, a flank is exposed, and a portion of the piquets and supports is in danger of being cut off—a portion of the reserves may make a counter attack. Reserves are usually posted in a central position, but may sometimes be divided with advantage. As a rule the reserve should be posted about two miles from the main body, and always out of sight of the enemy.

Strong Patrols.

The "Field Exercise" points out that the object of strong patrols is to ward off the enemy's reconnoitring

patrols, or to dislodge his post and ascertain what is behind; they may, therefore, when stratagem fails, act on the offensive, in the same manner as reconnoitring parties. These patrols should be furnished by the supports or reserve. They should rarely be pushed forward more than a mile, and in many cases should be accompanied by a mounted orderly to convey the information acquired to the rear.

Strong patrols are also sent out before day-break. These patrols must always proceed with the greatest caution for fear of falling in with the enemy's columns waiting for day-light to make an attack.

Detached Posts

are piquets on a small scale, usually placed to watch some road on an exposed flank; or to watch a village, road or height lying in front of a sentry line. Detached posts sometimes maintain communication between piquets if lying unusually far apart.

Examining Posts

are small parties detailed from piquets to examine all persons sent to them as to whether they shall be permitted within the lines, be confined as prisoners, or be turned back. These parties should be posted on roads in front of their piquets. The commander of the outposts decides when and where examining posts are to be established.

Artillery

can be required only when the enemy is near. A few guns may then be needed for the defence of some well-defined approach; care must be taken to protect them from the enemy's sharpshooters, and guns should never be placed in a position from which it would be difficult to extricate them in retiring.

Some positions, from their nature, do not require outposts. Such was Plevna, a town surrounded on three sides by heights, and on the fourth side by a river. The defenders at Plevna occupied these heights with their fighting line, and thus did away with any necessity for outposts. Although they pushed forward their defences down the slopes towards the enemy, those entrenchments were manned by troops under the direct control of the commander-in-chief, and thus were in no sense "outposts."

In an open country by day, cavalry furnish the outposts; but if the cavalry is liable to be attacked, infantry should be held ready to turn out on the shortest notice.

If a river line is to be watched by outposts, the piquets should be posted in rear of the bridges, with only sufficient sentries pushed across to give ample warning of the enemy's approach, on the principle that all defiles should be defended in rear, unless liable to be out flanked.

Standing Orders for Sentries.

I. No sentry to fire unless satisfied that the enemy is advancing to attack.

II. No one allowed to approach his post without being challenged, and then only one at a time.

III. Sentries not to fix bayonets except on dark nights and in foggy weather.

IV. To remain motionless, unless for purposes of better observation he is obliged to move.

V. If enemy seen advancing to attack, one of the sentries to raise his rifle with his helmet on it.

VI. To see that connecting sentries repeat his signals.

VII. No one whatever allowed to pass the sentry line, in or out. If they have papers or other authority, they must be directed to the points where examining parties are stationed.

VIII. If deserters or flag of truce present themselves they are to be halted outside the line, and the officer of the piquet must be called.

IX. All unusual sounds to be reported at once to the piquet officer.

X. Sentries to conceal themselves as much as possible, to watch by day and listen by night.

XI. Never to leave his post until regularly relieved or when driven back by an enemy.

Duties of Officer Commanding a Piquet.

I. To post his sentries and tell off his piquet into three reliefs for each post.

II. To see personally that all are acquainted with their duties as given above, and in the "Field Exercise," together with any special orders issued for the occasion. Organize the visiting patrols. To see that the best men are put on the most important posts. To see that all sentries are relieved every two hours or every hour if necessary.

III. Make a rough sketch of his post.

IV. Take steps to strengthen his post, construct shelter trenches in places which will bring an effective fire to bear on roads and paths likely to be used by the enemy.

V. Fix upon any places adapted for making a stand against the enemy while retiring on the support.

VI. Consult with officer commanding support on Rules IV. and V.

VII. To see that all understand the course to be pursued in case of attack, and know the exact positions where a stand is to be made as soon as decided by officer commanding outposts.

VIII. To send out reconnoitring patrols constantly, especially in thick weather, and instruct them in their duties before they set out.

IX. Report immediately to the commander of outposts any important information.

Duties of Officer Commanding a Support.

I. Acquaint himself with the ground which his men will occupy when extended; the ground between himself and his piquets; and the ground between himself and the reserves.

II. In concert with the officers commanding the piquets he is supporting, to determine the positions the piquets shall hold in the event of their retiring upon the support, or which all combined are to hold, should the support move up to assist the piquets.

III. Also, if the piquets are to fall back, determine how and where they shall retreat so that the fire of the support may never be masked.

IV. To put himself in communication with the officer commanding that portion of the reserves which is in rear of his support, and arrange the lines of retreat to be followed when the piquets and support retire.

Duties of the Officer Commanding the Outposts.

The commander of the outposts will dispose of his force as he may consider best for covering the position held by the main body. Generally speaking, outposts need only be placed in front of the main body and overlapping the flanks.

The commander first determines the strength, composition, and best position for the reserve.

He will regulate the position of the piquets and supports; by day and in clear weather chiefly by the requirements of the sentries; at night or in a close country by the means of defence.

He is responsible for the safety of the force covered, and regulates the amount of resistance to be offered and the position of the main resistance line.

He assigns to battalion commanders their different portions of ground and acquaints them with his intentions.

The reserve is under the immediate control of the officer commanding the outposts, and should be in constant communication with the main body.

He names the flank from which piquets are to be numbered, and gives the countersign.

He sanctions the construction or removal of obstacles.

The artillery accompanying the outposts is generally with the reserve, as also the cavalry when not out in front.

The officer commanding the outposts should occupy a central position, and his whereabouts should be indicated to the whole of the piquets and supports.

Obstacles.

Villages, streams, hills and woods are features of the country that require special consideration on the

part of an officer charged with the duty of posting his sentries and piquet. Woods, in particular, vary in size and shape, and as their existence in the neighbourhood of a sentry line is always productive of anxiety to those responsible for the security of troops from surprise, we will deal separately with the three kinds of woods usually met with under these circumstances.

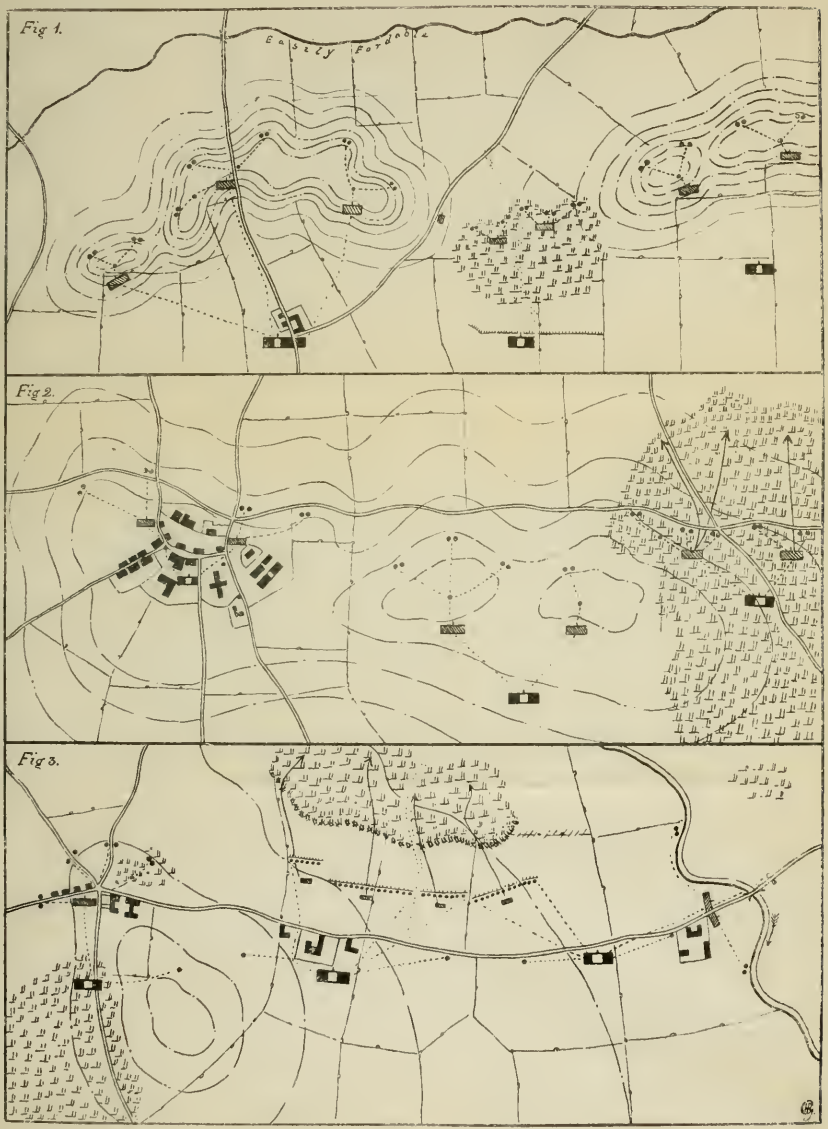
1st. The small wood, the "outer" edge of which is within 200 or 300 yards of the general line of sentries.

In this case the sentries are either advanced or withdrawn to occupy its outer edge, and the piquets are brought into the wood and posted near them. So favourable an opportunity as that offered by defending the outside edge of a wood for a certain time, against an enemy advancing over the open, should never be lost, provided that the general retirement of the whole of the outpost line is not compromised by a too prolonged resistance. (*Vide* Plate VI., Fig. 1.)

2nd. The wood partly within and partly beyond the general sentry-line.

In this case advantage should be taken of any natural clearing, such as a stream, ravine, or path running through the wood, more or less in conformity with the general sentry-line of the outposts, to post the sentries along the near side of it; but they must not be advanced beyond two or three hundred yards to seek such a position, or they become isolated and liable to be out-flanked. If no natural defensive line exists within these limits, a clearing of some sort must be made to conform with the general line of sentries. The sentries are then posted along the near side of it, and their piquets, as in No. 1, brought close up to them. The portion of wood stretching beyond the sentries must, however, be constantly searched by

THREE ILLUSTRATIONS OF WOODS THAT MAY COME INTO THE SENTRY LINE.



THREE ILLUSTRATIONS OF WOODS THAT MAY COME INTO THE SENTRY LINE.

reconnoitring patrols. If the enemy is active, reconnoitring patrols from the supports should be sent into the wood, in addition to those from the piquets. (*Vide* Plate VI., Fig. 2.)

3rd. The wood the "inner" edge of which is more than 400 yards from the general sentry-line.

Such a wood must either be held by a strong detached party (at all times a dangerous expedient) or the sentry-line should be advanced and posted about 300 yards from the near side. In this case sentries and piquets are posted together and *entrenched.* The near side (inner edge) of the wood must be entangled by cutting down the trees in order to delay the enemy issuing from it, and thus to keep him under the fire of the piquets. This kind of wood is very dangerous, and frequent patrols must be sent into it, both from the piquets and the supports, to explore the wood for a considerable distance. (*Vide* Plate VI., Fig. 3.)

Although it would be repugnant to a right idea of tactics to lay down a drill for outpost work, it is, perhaps, permissible to gratify the desire of most students for an illustration of the principles they are asked to adopt. And the author is fortunate in being able to provide on Plate VII. an example of the dispositions made by Colonel Mallock with a battalion of infantry acting as the outposts of a division, an example which is in comformity with the system of outposts promulgated by the "Drill Book." The outposts cover the remainder of the division encamped behind the heights between, and slightly in the rear of, the hamlet of Conway and Ridgway Farm-house.

READING OF MAP.

Scale about 3 inches to 1 mile; contours 40 feet; river Tone unfordable; river Dee fordable with difficulty.

For the sake of clearness, the sentry-line is indicated approximately.

PLATE VI

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READING OF MAP.

Scale about 3 inches to 1 mile; contours 40 feet; river Tone unfordable; river Dee fordable with difficulty.

For the sake of clearness, the sentry-line is indicated approximately.

Nos. 1 & 8 companies furnish the piquets and supports on the flanks.

No. 1 company gives a strong piquet, No. I., at Conway Park, and provides it its own supports.

No. 8 company furnishes two piquets, Nos. VIII. and IX., at Lee House, and at the hill to the left and due east of the position; and retains half a company in support of them.

No. 2 company furnishes two piquets, Nos. II. and III., at Conway Bridge and Hope Bridge.

No. 3 company gives two piquets, Nos. IV. and V., at Wish Bridge and Hurst Bridge.

No. 4 company gives two piquets, Nos. VI. and VII., at Vale Bridge and Dee Mill.

The first main resistance line of the outposts is the piquet-line.

No. 5 company is in support of Nos. II. and III. piquets.

No. 6 company supports Nos. IV. and V. piquets.

No. 7 company supports Nos. VI. and VII. piquets.

The second main resistance line is clearly indicated on the map, and also the lines of retreat for the various portions of the outposts. With such a strong line of defence (a river) no reserves are considered necessary. The right flank of the "position" is evidently the weaker, and most liable to be attacked. The left flank, in addition to being much more open, is protected by the river Dee within rifle-range of Ridgway Farm and the heights behind it.

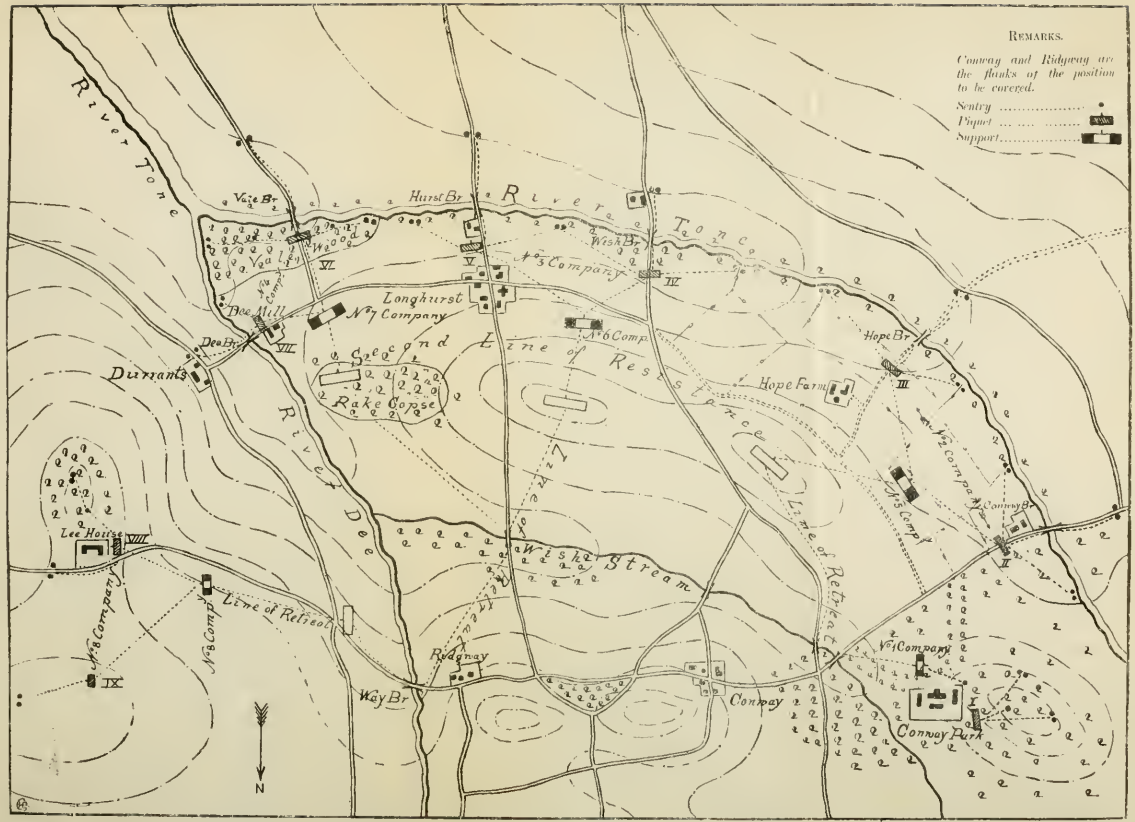
To the same officer the author is indebted for an account of a scheme of regimental training in outpost duties, introduced by him while serving with the Royal Fusiliers in India. Although this account was given in the course of correspondence with the author, it is so given as to be admirably fitted for publication in Colonel Mallock's own words.

"The regimental training in outpost duty, which I mentioned to you, was carried out somewhat as follows:—

"A scheme was drawn up and a defensive position for a considerable force chosen outside the cantonment. The whereabouts and extent of this position was denoted by flags. The regiment was required to cover its front and flanks with a chain of outposts.

PLATE VII.

Remarks.
Conway and Ridgway are the flanks of the position to be covered.
Sentry
Piquet
Support
Hope Br
III
No 2 Company
No 3 Comp
Conway Br
II
of Retreat
No 1 Company
I
Conway Park



OUTPOSTS FURNISHED BY A BATTALION OF 8 COMPANIES.

Scale, 3 inches to the mile.

"The ground was reconnoitred a day or two before, and a general line of front which would give the best *line of observation* for the purpose was chosen.

"There were also chosen one, two, or three successive *lines of resistance;* as continuous as was possible, having due regard to the capabilities for defence afforded by the ground.

"Four companies were detailed to occupy the front line, and four companies were kept in reserve. The defence was divided into sections, and officers commanding companies were made thoroughly acquainted with the general arrangement of the whole scheme:—of the extent of front to be watched and defended; of that portion of it specially allotted to them; of the most convenient routes for them to reach their positions; of the nature and whereabouts of the successive *lines of resistance* chosen; and of the position of the reserve.

"The *reserve* was, as a rule, kept in two bodies, rather to the flanks of the general line of defence, and near the roads leading to them, under cover itself, but on ground whence the commander of each double company could watch the action of the outpost line in his front.

"Generally speaking, it was intended that each double company should be the reserve of the two companies in its front.

"*Lines of retreat* up nullahs and deep re-entrants were carefully chosen, so that when resistance on the part of the outposts was no longer required, the front of the main position might be rapidly cleared.

"The detail of placing sentries, piquets, and supports in the front line was left to officers commanding companies.

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"The country being generally open, and the *line of observation* a commanding one, but few sentries were, as a rule, required, and the general arrangement was, as far as I remember, that companies were pretty evenly divided—one half-company furnishing the sentries and the piquets, the other half-company in support occupying the *first line of resistance* chosen.

"All the arrangements, were, of course, under the supervision of the officer commanding the outposts, viz., the C. O. of the Regiment, and the way in which this was exercised, and the whole thing tested, was as follows:—

"The four companies for the front line paraded and marched independently to their respective positions, under their own officers. The half battalion, in reserve, paraded somewhat later, and was marched to its position in one body. On arrival on the ground, it was sometimes kept together and sometimes, as I have before mentioned, divided into double companies, and placed somewhat to the flanks.

"Shortly after daybreak, when the sentries, piquets, &c., had been posted, the C. O. inspected their position, criticising, and ordering any alterations he thought advisable.

"At a fixed time the fight commenced. The enemy was represented by about half a dozen N. C. officers, or men previously trained for the work, with white flags, as in working with a marked enemy at Aldershot.

"They were directed by an officer specially selected, who was virtually an umpire, for it was left to him to decide as to the time during which his advance would be checked by the resistance offered. This would, of course, vary with the falling back of the sentries on the piquets, and these on the supports, &c., with the natural strength, &c., of the successive *lines of resistance*. It

was usually from five to ten minutes, but the rule was that, while the flags halted, the outposts held their ground; the advance of the flags was the signal for them to retire.

"When, on a calculation of the time required for the occupation of the main position, it was considered that further resistance on the part of the outposts was unnecessary, the 'Cease fire' sounded, the front was rapidly cleared, and, gaining the lines of retreat marked out for them, the companies re-formed in rear of the position and returned to barracks. All the dispositions made, the posting of the sentries, the positions of the piquets, the mode of conducting the retirements from the successive lines of defence, the action of the reserves, &c., were afterwards criticised and commented on by the C. O., and errors pointed out.

"This regimental instruction took place at Belgaum in 1876. It was based on General Sir E. Hamley's treatise on outposts, much of which found its way subsequently into our present edition of the 'Field Exercise.' It was, I think, practical. It enabled a battalion to practise outposts as a whole, and the marked enemy brought into bold relief many errors which would otherwise have remained unnoticed. For instance, I remember on more than one occasion seeing the marked enemy advancing with no force to oppose it; a portion of the outpost line still clinging to the defence of some strong point such as a ghaum or village in its rear. Here were the lessons to be taught of the *difficulty of withdrawing men from strong positions* and of the value and uses of a *reserve;* and I may remark, incidentally, that it would be the endeavour of an intelligent officer to manœuvre his flags so as to bring out these lessons.

"As a matter of detail, I would remark that the

division of the defence into sections, and entrusting the defence of each section to one commander, was preferable to our authorized method of supporting one company by another in its rear. Our 'Field Exercise' lays it down that piquets and supports should belong to the same *regiment.* I would go farther and say they must belong to the same *company.*

"N. B.—We were decidedly in advance, at the time, of the 'Regulations,' but our practice was greatly approved of by the officer commanding the district, and I place at a high value the clause in our regulations, that 'the commander of the outposts will dispose of the force under his command in such manner as *he may consider best* for covering the main body in rear.'"

Cavalry Outposts.

If cavalry alone furnishes the outposts, it must, by means of dismounted men, barricades, &c., endeavour to furnish the element of resistance usually provided by the infantry.

Whenever the outposts are composed of a combined force, the infantry should furnish all stationary posts and leave the reconnoitring and patrolling duties to the cavalry.

In an open country, by day, the line of observation and information may, with advantage, be entrusted to cavalry and, in many cases, it may be advisable to push cavalry as far forward as possible; but, if driven in it should be able to fall back on infantry.

A cavalry piquet varies in strength according to the number of vedettes and "cossack posts" it has to furnish, but it should rarely exceed 30, *i.e.*, half a troop, of which at least one-third should be told off for patrolling.

Vedettes and Cossack Posts.

Vedettes are posted either double or single, according as they are relieved from the piquet, or by "cossack posts." The latter system consists in posting the reliefs for each single vedette close to him. Cossack posts are suitable for situations when it would be difficult to relieve a vedette or when a vedette cannot be "seen from the nearest piquet."

Signals.

"If a vedette wishes to attract attention, he holds up his head-dress" as a signal. If he sees cavalry he circles to the right; he circles to the left for infantry, and describes a figure of eight for a combined force. In the case of cossack posts, a man would ride in to the piquet to report. Circling should not be employed without urgent necessity, as it disturbs the rest of the whole outpost force. If suddenly attacked, a vedette fires.

March Outposts

Is the name given to the outposts which a force throws out at the end of a march, and which are usually furnished by the advanced or rear guard. During the period of marches and combats the outposts often have to be put out late in the day, probably in the dark.

The main points, when taking up a line late in the day, or in the dark are:—

1st. To occupy all roads and send constant patrols down them.

2nd. To send patrols to all villages in the neighbourhood. If an enemy is near he will be found or heard of in the villages.

3rd. "If there is a stream running along the front or flank, to occupy the bridges and fords and patrol the banks." (Cavalry Movements, 1887.)

The patrolling would be done by vedettes furnished by officers' patrols, while infantry piquets would hold the bridges, &c., and be placed in rear of the cavalry on all the main avenues of approach.

Test Questions.

Advanced Guards and Outposts.

I. As a general rule, what proportion should troops composing an advanced guard bear to the main body? Detail a suitable advanced guard for an independent division, and show by a diagram how the different arms should be distributed on the line of march.

II. Describe the various means by which the safety of an army on the march, and its repose when halted, are secured.

III. Describe the duties of the commander of the outposts and of the commander of a piquet.

IV. What distance should the main body of an army be from the main resistance line of its outposts? Give your reasons.

V. State how you would post your piquet if a wood occurred in or near your sentry line:—

(1) A small wood the outer edge of which comes within the general line of sentries.

(2) A large wood, the outer edge of which cannot be reached.

(3) A wood, the inner edge of which does not quite come up to the sentry line.

Illustrate your answers, in each case, by a sketch.

VI. What is the difference between the cordon system and the patrol system of outposts; on what assumptions are these systems based respectively? What are march outposts?

VII. What is the least amount of lateral space that should be covered by outposts: and when should outposts completely surround an army?

VIII. How would the advanced guard of an army corps, marching through an ordinary country, act on a report coming in from its scouts that a village, one mile and three quarters in front, is occupied by an enemy, evidently with the intention of holding it? The orders given to the commander of the advanced guard were to push on, if possible. Illustrate your answer.

IX. How are the flanks of an advanced guard protected when moving in:—*(a)* An ordinary country. *(b)* A country with continuous heights, on one or the other side, and within reach of the roadway. *(c)* A country with heights much broken on both sides of the road.

X. What should be the composition of the outposts of a force under the following different conditions? *(a)* In an open country by day, and by night, the enemy not being at hand. (*b*) In a close country when the enemy is near. (*c*) In a close country, when a bridge or defile has to be guarded.

XI. How is the posting of sentries, and how are the number and the strength of piquets affected by ground?

CHAPTER VI.

The Defence of a Position.

STRATEGICAL considerations usually determine the localities in which armies are concentrated; but tactical considerations alone regulate the actual positions occupied by those different portions of an army which are to attack or repel the attack of the enemy.

The leaders of an army are, at the outset of a campaign, committed to a general policy, offensive or defensive. With the reasons for adopting one or the other policy we need not here concern ourselves. It will be sufficient to observe that a defensive attitude is usually taken up by the weaker side.

Principles of Defence.

A commander, after having made the best reconnaissances that the time and means at his disposal admit, should satisfy himself before finally selecting a defensive position from which to await attack, that he has sufficient troops to defend it. No other kind of fighting is so dependent on the formation of the ground as the defensive, and in calculating the number of troops required to defend a given position, it is necessary to consider fully and carefully the number and nature of its vital points.

"Vital points" are posts which command main avenues of approach, and which, if captured, would seriously influence a battle, either by enabling the assailants to hold a large portion of the defenders

engaged on one flank of the position while the other was being vigorously attacked, or by preventing the defenders from issuing out to deliver a counter-attack.

Vital points are also those posts which, if captured, would threaten the defenders' line of retreat, or which, if captured and held, would afford good rallying points from which to deliver a decisive assault. When and where such points exist in a position can only be determined by a tactician on the spot; but in every configuration of country comprising two or more of the principal requirements of a good position, there are certain to be one or more "vital points." A vital point in a position may be compared to a swordsman's right hand, which, if maimed, reduces him to continue the contest, on unequal terms, with his left.

The "Key" of a position is that portion of it which either dominates the whole, or commands its most vulnerable parts. So long as that is held by the defenders, a battle is not lost, and the assailants are liable to be ejected from any positions they may have captured; but when once the "key" of the position has been successfully assailed by the attackers, and when once the defenders have lost their grip of it, it is time for the commander of the defence to consider the question of retreat. If, therefore, it is important in a commander to recognise the "vital points" of a position, it is doubly important, and, indeed, the very essence of defensive tactics, that there should be no mistake about deciding what is the "key" of a position, and no hesitation in sacrificing whatever is necessary in order to hold it. The art of tactics in defence is to decide with confidence what constitutes the key of a position, and what vital points must be held in conjunction with it.

As we have said, these points can only be fixed on the spot, and in selecting them none of the principles of defence ought ever to be violated through ignorance; and when circumstances necessitate the violation of a principle, the possible contingencies must be carefully considered. As a rule, a general line, as straight as possible, and without any very pronounced salients, is best for the defence.

The main features of a good position are:—

1. Extent proportioned to the force available for defending it.
2. General command of surrounding country.
3. Depth to admit of ample cover for all troops not actively engaged, and of their being freely manœuvred.
4. Sufficient lateral communications.
5. Water supply.
6. Ample means of retreat.
7. Possibilities for issuing to deliver counter attacks.
8. Flank protection.
9. Artillery positions.

It will rarely happen that all these advantages are found ready to hand; but some of them must be secured, and others may be artificially provided.

Positions should not be completely occupied before the direction of the enemy's attack is ascertained. The ranges to all important points should be ascertained. "The defence whose only object is to repel the enemy may "be passive, *i.e.*, it can confine itself to maintaining its "position. On the other hand the defence whose object "it is to achieve a decisive result, must be active, *i.e.*, "it must be combined with attack. In accordance with "this, troops should be economised and the main reserve "placed at a point from which an offensive movement "can most readily be executed at any given moment. "This, as a rule, will prove to be on one of the flanks."*

* German *Field Exercise*, 1888.

Rules to be observed in occupying a Position.

1. Post the artillery on the most commanding ground suitable for its effective action, concentrate its fire on points which command approaches, and compel the enemy to remain out of reach or to deploy at a distance and thus expose his real intentions. During the earlier stages of a battle the defenders' guns (escorted by cavalry) may often take up very advanced positions, but their flanks must be protected by strong bodies of cavalry, as the assailants' cavalry will endeavour to cut off the guns.

2. As soon as the direction of the enemy's attack is is ascertained, post the first line of infantry (entrenched) along the highest available contours, advancing it if necessary to include the outer edge of woods, villages, etc., within rifle range of any vital point. When posting infantry (who will have to bare the brunt of the battle) be careful to economise them by occupying only places assailable by the enemy's infantry, and provide supports and local reserves. The former should not be more than 150 yards behind the firing line, and the latter should not be more than 300 yards behind the supports.

3. Post the second line with a view to its four specific objects, viz.—

1. To reinforce vital points when they are in danger of being captured.
2. To meet flank attacks.
3. To make counter-attacks.
4. To protect a general retreat.

4. If, in addition to a second line, there are enough troops to have a reserve, post it at first in some central position well out of artillery range, and move it during the action to the most threatened flank or other part of the position.

5. If ground on flanks is open and suitable for cavalry to manœuvre on, utilize the cavalry arm freely to discover any turning movements of the enemy, and to prevent his cavalry from reconnoitring.

6. When flanks are open to attack it is often desirable to provide against turning movements by making lines of entrenchments in echelon behind them, which may be occupied by a portion of second line or reserve if enemy attempts a flank attack.

7. Baggage trains, general hospitals, extra ammunition, field parks, etc., should be posted well in rear, and three days' cooked rations should be ready to be served out to troops at first halting ground, in event of retreat.

8. Every force within striking distance of an enemy protects itself with outposts—cavalry, or infantry, or the three arms combined, according to circumstances.

It is quite impossible to lay down exact rules for the actual disposal of a force acting on the defence; so much depends on the ground and also on the force available.

The "Drill Book" says that, in ordinary country, including all arms and reserves, five men per yard are sufficient for defence.

For the purely *passive defence* of a position three men per yard may, under certain conditions, be deemed sufficient. For the *active defence*, *i.e.*, when a counter-attack is contemplated, from five to twelve men per yard may be required. Their disposition would be somewhat as follows, but varying according to circumstances and the ground.

Outpost Line:—Strength, from $\frac{1}{6}$ to $\frac{1}{5}$ of whole force; posted about two miles from the main position, commanding the approaches, and resorting chiefly to natural cover and defences.

Main Line, consisting of:—

(*a*) Advanced posts.

(*b*) First Line of Defence.

(*c*) Second Line of Defence.

Advanced Posts within about 1,000 yards of first line, which would form *points d'appui* for the enemy, should be held. These advanced posts would usually be garrisoned by troops from battalions in the second line. Detached posts, in front of, or in extension of a flank, especially if they command main roads, should be held by the three arms, unless supported by artillery from the main position.

The First Line of Defence, comprising villages, hills, woods, or half closed works, should be held by about half the force after deducting the *general reserve;* the defensive supporting points would be held passively, in order to set free the maximum number of troops for the offensive defence of intervals between. These supporting points should be strengthened, as far as time permits, by earthworks, the intervals being protected by shelter trenches offering no obstacle to counter-attack.

The Second Line of Defence, 600 to 800 yards in rear of first line, should be hidden from the enemy, if practicable, and placed at first in positions whence the troops composing it can be moved, either in whole or part, as soon as the enemy's attack is developed, to aid in repelling it or to make a counter-attack. Any cavalry that is not employed in front or on the flanks should be posted at first either in the intervals of the Second Line, or with the General Reserve.

Artillery should, if possible, be placed about 500 yards in rear of first line; if this cannot be done the guns must be actually in the first line.

Third Line, or General Reserve, about $\frac{1}{3}$ of the force, should be retained at the disposal of the Commander-in-Chief, for counter-attacks, or to operate against deep turning movements. It should be placed in rear of the centre, or echeloned behind one or both flanks according to circumstances. The larger the defending force the greater should be the distance between the general reserve and the exposed flank; greater space is thereby afforded for deployment and advance in counter-attack, so as to threaten that of the enemy, and increase the security from enveloping movements.

A Rallying Line should be formed from 1 to 3 miles in rear of the position occupied on the line of retreat.

Counter Attacks

are of two descriptions:—

1. Those made by the local reserves of the *First Line.*
2. Those made by separate brigades or divisions furnished by the *Second Line*, or by the *General Reserves.*

The first take place just as the enemy is advancing to storm the position, immediately after he has forced his way in, or just after his attack has failed. The divisional cavalry can sometimes be employed in these sallies, taking the assailants in flank while they are heavily engaged in front. The second class of counter-attacks usually produces decisive results, and may either be made on a flank or on the centre of the assaulting force. These counter-attacks must be covered by the convergent fire of all the batteries that can be brought to bear upon the point assailed.

Fire Action.

The object of the defence is to exhaust the assailants. This is done by providing cover for

everybody, in supplementing whatever natural cover exists by entrenchments and hasty field redoubts. From this cover the defenders keep up a continuous fire from the moment they have an adequate mark to aim at. Ammunition should never be wasted by firing at an inadequate mark, and its expenditure ought to be controlled by section commanders; but considerable latitude should be given, as the object of the defenders is not simply to prevent the assailants reaching within point-blank range of the position, but to diminish their force at a distance, when their return fire can only be random and comparatively harmless.

Infantry Fire Tactics in Defence.

In defence the effective use of fire is the chief object to be considered, and a clear field for the use of the rifle is necessary. The firing line should be as thick as compatible with a free use of the rifle at any point that is threatened, as soon as the attacking force comes within effective musketry fire. Against artillery a good effect may be obtained by infantry fire up to 1,700 yards. Until the assailants artillery comes within the 2nd zone, *i.e.*, within 1,700 yards, the defenders' *firing line* of their main position should be kept well back under cover. Up to this stage the defence will be conducted by the advanced posts consisting of artillery machine guns, mounted infantry, and small bodies of infantry, which should command by their fire ground which cannot be seen from the main position. The artillery of the main position will, of course, open fire as soon as the enemy's batteries or troops offer a sufficient target, and will cover the withdrawal of the troops occupying advanced posts. Each section of the fighting line should be organised as a separate

command arranging for its own supports and local reserve. In our army a section of the fighting line would usually be allotted to a battalion. Supports should be drawn closer to, or kept back from, the firing line, according to the fire to which they are subjected, and should always be moved up into it as required to keep up the fire to its full development. Local reserves should be kept back only so far as to be sheltered from the enemy's fire, but near enough to be close at hand for the defence of their respective sections. When the enemy approaches to medium range (3rd zone), the defenders should direct their fire upon his supports and reserves as well as at his firing line. As soon as the enemy's real objective points are ascertained the defenders will reinforce those places so as to bring a superior fire to bear upon the attackers. Throughout the progress of the attack, volley firing by sections will be found the most effective fire to be used by the defenders. Volley-firing conduces to keep troops in hand, facilitates the employment of converging fire, allows of the correction of elevation and direction, by observing the points where the bullets strike, and affords the best means for regulating the expenditure of ammunition. If the assailants are not repulsed, and reach the final stage of the attack, independent firing will be employed.

The duty of *directing* musketry-fire falls on the company commanders in the fighting line; that of *regulating* the fire on the section commanders, under the direction of *the commanders of companies.*

The general principles for the regulation and directing of musketry fire are as follows:—

The fire must be slow enough to ensure accuracy. Pauses of some length should occasionally be made to allow the smoke to clear away, to judge of the effect

produced, to give the necessary orders, and to keep the men steady.

In the defence the pauses in firing should take place when the attacking troops are lying down, or partly covered.

The cessation of fire in one portion of the line of defence may often serve to draw on the enemy to the point which he thinks has been abandoned, and a sudden resumption of fire, from the same spot, will produce a considerable effect on the assailants.

The distances at which fire should be opened depend on the formation of the ground, on the vulnerability of the objectives, and on their tactical importance. Firing on an enemy at a "long" distance may result in shaking him, and retarding his entry into action; it may render difficult the occupation of an important point,* such as a bridge, an intersection of roads, or any particular line of advance imposed on him.

In the defence, rather than in the attack, opportunity will be often found for firing with effect at "medium" or "long" distances. . . .

Long-range firing on the part of the defence may often have the effect of inducing the attacking force to break into extended order too soon, and to expend more ammunition at "long" distances than they can afford.

Artillery Fire Tactics in Defence.

Field artillery should, in most cases, take up a preparatory position behind its probable firing-line, in order that, having ascertained the direction of the attack, it may be moved up at once into the most

* A remarkable instance of this was furnished by Suleiman Pasha's attack on the Skipka Pass. The Turks from the woody mountain position commanded the only line of retreat and of communication the Russians possessed, and at long ranges inflicted frightful losses on them.

desirable position, and also to conceal from the enemy its strength and intentions until the time arrives for its effective action. The reason for this preparatory concealment will not be diminished by the introduction of smokeless powder; but when guns open fire the absence of smoke will make it harder for the assailants to ascertain their exact whereabouts, and this may lessen somewhat the necessity for providing artificial cover for the defenders' batteries.

The first object of the defenders' artillery should be to delay the development of *a well conceived* attack, and gain time for the arrival of reinforcements, or for the adaptation of the plan of defence and the dispositions of the reserves to the scheme of attack. The absence of smoke from their own fire will enable the gunners not only to aim better, but also to fire quicker.

If decidedly inferior to the artillery of the assailants' the defenders' guns should be masked until the enemy's infantry shows. If not very inferior (taking into consideration the advantage of natural or artifical cover obtainable) the artillery of the defence replies to that of the attack, and should endeavour to inflict severe loss on the hostile artillery before it is able to find its range. With this object the defenders should carefully ascertain the ranges of all the artillery positions capable of being occupied by the enemy, and during the earlier stages some guns supported by detachments of the other arms should be pushed out, either to hold these positions, or, at any rate, to harass the assailants and hinder by every means their occupation of them.

When the enemy's infantry appears, all the artillery-fire of the defence should be directed on it. Until the attacking infantry gets within rifle range of the position the defenders' artillery can shell it freely, and every advantage should be taken of these precious moments.

At all times during the progress of a battle the defender's artillery should look out for opportunities for firing on the enemy's guns when limbering up, when in movement, or when coming into action; at such times they are silenced and particularly vulnerable.

The defenders' artillery must hold its ground at all hazards, unless ordered by the general commanding the troops to fall back.

If the attack succeeds a part of the defenders' artillery must hinder the advance of the enemy's batteries into the captured position, while another part concentrates its fire on such of his infantry as have forced their way in.

In the event of a retreat being ordered the artillery will cover the withdrawal of the infantry, and then fall back withdrawing a portion of the guns to cover the retreat of the remainder, relying on the cavalry for flank protection.

In the event of counter-attack the action of the defenders' artillery will be very bold, and there should be no hesitation to expose the guns to the fire of infantry, and in order to provide for a lavish expenditure of ammunition the waggons must be pushed to the front.

Outposts are so intimately connected with the defence of a position that it will not be out of place here to quote what the "Drill Book" says about artillery with the outposts.

"Artillery will be but rarely used in an ordinary line of outposts, such as is taken up day by day during a campaign. Its presence can be required only in the case where the force to which it belongs is in the immediate neighbourhood of the enemy.

"Even under these circumstances the proportion of artillery will be very small, being limited to the few

guns which are needed for the defence of some well defined approach. Artillery acting with a line of outposts should always, if the outposts are intended to retire and not to hold their ground, be withdrawn before it is exposed to infantry fire; its extrication might otherwise embarrass the action of the main force."

The action of the artillery of a force standing on the defensive is divided for descriptive purposes in the "Field Artillery Drill" into four parts.

They are as follows:—

(*a*) The initiatory stage.
(*b*) The artillery duel.
(*c*) The main action.
(*d*) The retreat; or the assumption of the offensive.*

The increased accuracy and range of modern rifles is continually diminishing the effect of artillery-fire, which, after all, on the field of battle, is limited to the range of human vision. The margin between the two arms in this respect is being continually reduced. Artillery must, therefore, be prepared to throw its weight into an action at close quarters.

In 1877 the Russian artillery was inferior; but General Todleben appears to have attributed the feeble rôle that it played more to the use of artificial cover made by the Turks than to any other cause. General Todleben is credited with having said that it took a Russian battery a whole day's firing to kill one Turk. The data on which this calculation was formed is not given; but such was the opinion of the first military engineer during the most recent European war.

Again, the Russians suffered more severely during

* "Field Artillery Drill," Vol. II., Chap. v.

the same campaign (1877) from the long-range unaimed rifle-fire of the Turks from behind entrenchments than from the artillery, which was, however, of the latest construction.

Sketch of a Position.

In Plate VIII. we see how a position of about a mile in extent would be occupied by a small force of the three arms. There are four battalions (one of which is held in reserve), one regiment of cavalry (of which two squadrons are held in reserve), and a battery.

The artillery is at once posted on a hill commanding the main approaches to the village of Conway. The village itself is held by one battalion, the road on the left by one battalion, and the farm-house on the extreme left by one battalion.

Two squadrons of cavalry are kept on the right in support of an officers' patrol sent to occupy the hill to the west of Conway Park.

The village of Conway is placed in a state of defence (*See* Chapter XVI).

Three companies are told off to defend the village, furnishing their own supports.

One company extends along the road to the left of the village.

The remaining four companies form the battalion reserve.

No. II. battalion extends four companies along the outer edge of the wood, keeping four companies in reserve.

No. III. battalion extends two companies along the road, and two companies are told off for the defence of Ridgway farm-house, which is placed in a state of defence: four companies are kept in reserve.

N
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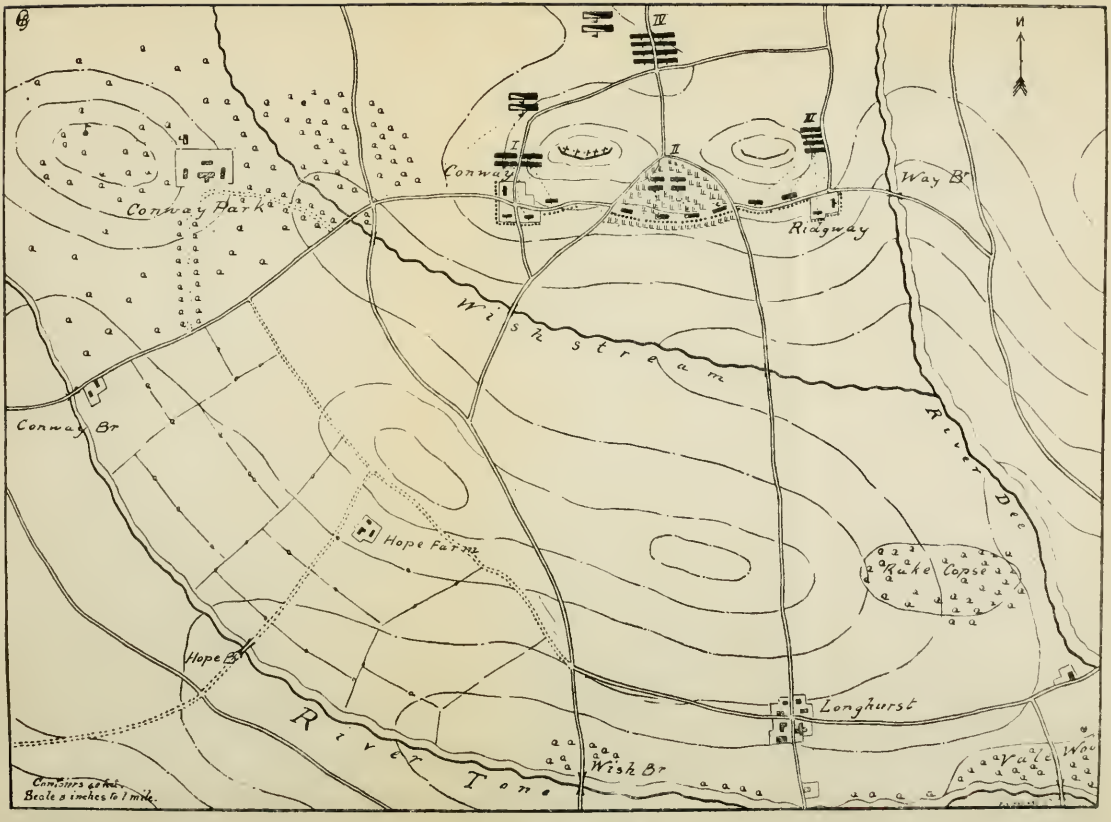

OCCUPATION OF A POSITION.

No. IV. battalion is kept in the second line as a general reserve posted with a view to its four specific objects, viz.:—

1. To reinforce any of the vital points—Conway, The Wood, or Ridgway.
2. To make a counter-attack.
3. To meet flank attacks.
4. To protect a general retreat.

The key of the position is the hill north and east of Conway.

The left flank of the position is protected by the river Dee.

Hope
Hope
Scale 2 inches to 1 mile

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CHAPTER VII.

Attack on a Position by the Three Arms.

BEFORE deciding to attack a position, a commander endeavours, by means of reconnaissances, both armed and secret, to obtain all possible information regarding its capabilities. If the enemy's outposts are well posted, and his piquets and sentries alert, a reconnaissance in force would probably be necessary to drive in his outposts, and force him to unmask, *i.e.*, show himself on the ground he means to occupy.

The command of a reconnaissance in force is entrusted to an experienced officer, and is usually made with a view to bringing on a general action.

A general action from the point of view of the attacking side may be divided into four stages :—

First Stage.

The advanced guard, reinforced if necessary, drives in the enemy's outposts. At this stage, provided the country admits of their manœuvring, the cavalry can hardly be used too boldly, especially on the flanks.

1st. To prevent the defenders' cavalry discovering the plan of attack.

2nd. To try and work round the flanks of the position, and discover what natural or artificial protection the defenders have got for them. To ascertain, if possible, the depth of the position, and where the defenders' second line and reserves, and also his lines of retreat are situated.

3rd. To cover the flank movements of their own infantry when not formed for attack.

4th. To harass the defenders, by opposing their cavalry and threatening their infantry whenever an opportunity occurs for delaying, even momentarily, a deployment. Manœuvring on the flanks, the cavalry can also judge of the effect produced by the artillery, and report on the practice the guns are making.

A well-handled body of cavalry with a few field guns may play an important *rôle* in every stage of an action, provided its commander is in touch with the other arms, and is not so rash as to suppose that cavalry alone can engage infantry, unless the infantry have run short of ammunition are demoralised, or taken unawares.

If instead of charging the British squares at Waterloo Napoleon had sent half his cavalry to the right to harass the Prussians, and a portion of the remainder to work round Wellington's right flank, he might have considerably delayed Blucher's advance on one side, and spread panic as far as Brussels. He could subsequently have hovered on the flanks, and in rear of the Allies, or rallied on Grouchy's force.

When not operating on the flanks the normal place for cavalry on the field of battle is with the reserves, as cavalry can thence be quickly transferred to any part of the field when required.

Second Stage.

The defenders' outposts being driven in and his flanks well scoured, a battle opens with what is called the "Artillery Duel."

Having approached as near as possible, the assailants' guns should be massed as much as the ground

admits of, and their fire concentrated upon some vital point.

If the artillery of the defence replies, the guns of the attack will be directed with a view to silencing it. This is not easy to accomplish, because the defenders' guns are generally protected by epaulments, and because they can be withdrawn out of action until the assailants' infantry appears. If the defenders' guns are not brought into action the assailants can shell the position with impunity, and their machine guns may be boldly advanced.

It is a maxim that no position ought to be assaulted by infantry until it has been well pounded and shaken by artillery. Nevertheless, a good many valuable hours of daylight may often be wasted to little or no purpose, by prolonging a harmless cannonade directed against substantial earthworks.

We have seen that the direction of the artillery attack will depend at first on the fire tactics of the defence; but eventually the concentrated fire of the assailant's guns must be directed on some vital point, the capture of which has been decided upon.

During the artillery cannonade, the attacking infantry is deployed, and if a turning movement is contemplated, the troops told off for it are marched away covered, if the ground is open, by cavalry in skirmishing order.

At all times when within view of an enemy, and especially when moving to a flank, every possible advantage should be taken of any cover from view; and this is often obtainable from much gentler undulations in the ground than men are accustomed to utilise in drill.

Third Stage.

This introduces the infantry attack, and there are now three courses open to the assailants.

First.—To envelope a position, either by advancing from different directions, or by causing the troops in rear of the fighting line to join in the attack, and gradually close on it, without exposing a flank to counter-attack, a plan which necessitates a great superiority in numbers. "Attempts at executing enveloping movements with portions of the infantry already extended, and probably even already engaged, when they are not specially favoured by the ground, are not likely to succeed, and lead to a mischievous splitting-up of forces." *

Secondly.—To make a holding attack in front, and a wide and deep turning movement round one or both flanks. This plan implies a considerable numerical superiority, and entails the most careful and accurate calculations of time, to ensure the combined action between the front and flank attacks, without which they become isolated, and liable to be beaten in detail.

The turning movement can only be made successfully by detaching a part of the force, when out of sight of the enemy. For, if the movement is not a surprise, its effect is greatly marred. The turning movement must also be "wide and deep," because the defenders' flanks will be defended by earthworks when not naturally strong. Thus a general is committed to what are virtually two attacks, and for this purpose he must divide his forces. Either force will be liable to the defenders' counter-attack, and therefore, each must be strong enough to hold its own against any counter-attack which it is possible for the defenders to make at the moment when they are at their widest point of separation.†

* German Field Exercise.

† To make this counter-attack effective, the defender, when occupying a position, should place as few infantry as possible along its front, and keep large reserves concentrated behind his flanks.

Still, if a "turning movement" is accurately timed, and secretly and skilfully executed so as to ensure the two attacks, that in "front" of a position, and that on its exposed flank, being simultaneously delivered, it may be attempted with a fair prospect of success.

Third.—The third course open to the assailants is perhaps that most generally adopted, and when their preponderance in numbers is not great, it is certainly the least risky. It is to make a demonstration along the front of the defenders' position to keep them generally occupied, especially by artillery fire, and by means of reserves to attack a vital point, if possible, with local superiority.

In order to do this, the commander must realize that he has committed himself to a direct attack, and must throw his reserves into the fight exactly at the right moment. Battalions, brigades, divisions, must be launched, not at uncertain intervals, but as nearly together as possible.

In planning an attack, a general is influenced in his decision as to which of these three courses he will adopt by the following considerations :—

1st. By the configuration of the ground, and the amount of lateral communication between the centre and flanks of his troops while advancing against the position.

2nd. The quality of his own troops.

3rd. The quality of the defenders' troops.

4th. The dispositions of the defenders.

When once the action has commenced, the accidents of war and the mistakes of either side tend to modify the original design, and a wise general will always make considerable allowance for the changes and chances of war.

To take advantage of an enemy's mistakes so as to turn them to immediate account is the highest aim of tactics.

The Duke of Wellington, when asked to state the opinion he had formed of Napoleon as a tactician, is said to have replied: "Napoleon's presence on a field of battle is equivalent to forty thousand men."

Our accepted mode of infantry attack is laid down in the "Drill Book," and, in the words of the Drill Book, is briefly summed up as follows:—

"*Distribution.*—Troops allotted for the attack will, when of sufficient strength, be divided into first, second and third lines:—

The first line, subdivided into firing line, supports and reserves, engages the enemy, and is intended eventually to establish itself within charging distance of his position, and thence to deliver such a heavy fire as will enable the second line to approach the point selected for attack, for the purpose of driving him from it.

The second line assaults the position when its way is prepared through the losses inflicted upon the enemy by the first line.

The third line either confirms the success and pursues the defeated enemy, or covers the retreat of the first and second lines, and so prevents a repulse, or even a defeat, from becoming a rout."

To attack a position across the open is a desperate undertaking, and if no cover exists, successive waves of skirmishers pressed on vigorously, in rapid, never-failing succession can alone hope to capture entrenchments resolutely and scientifically defended. Confusion is inevitable, and any infantry attack formation, founded on the supposition that companies are not to be mixed up, however good in theory, can hardly be expected to

meet the requirements of modern warfare. Experience has shown that in the attack on an entrenched position, not only do companies become mixed, but battalions, brigades, and even divisions. The odds in favour of the defenders, if entrenched, are undoubtedly very great, and with smokeless powder and the new magazine rifle they will be greater still. However, positions have been assaulted and carried against fearful odds from time immemorial, and will be again when nations go to war.

The breech-loader has developed fire action in the open, to the exclusion of what was called "shock;" but the spade, as demonstrated at Plevna and in the Shipka Pass, has beaten the rifle; and the next great war, like the last, will show that before entrenched positions, resolutely and scientifically defended, can be captured, rifles will frequently have to be clubbed and bayonets crossed. The Russians, in 1877, often reached the Turkish entrenchments, only to perish in them, or to capture them by desperate hand-to-hand fighting.

The construction of the Turkish and Russian field fortifications and their defence, are well worth the careful consideration of every thoughtful soldier. Though belonging more properly to field fortification than to tactics, the student is recommended to read a most interesting and valuable book, entitled, *The Russian Army and its Campaigns in Turkey in* 1877-78, by F. V. Greene, U. S. Army.* The book is published with an excellent atlas, and sets of drawings representing very clearly the types of field-works used by the Turks and Russians respectively.

Lieutenant Greene remarks, in his concluding chapter: "The campaign of 1877-78, like every campaign which was ever fought, furnishes its military lessons

* Publishers, Messrs. W. H. Allen and Co., 13, Waterloo Place, London.

for the future, mistakes to be avoided, successful manœuvres to be repeated under similar opportunities; but there is one feature—a question of tactics—in which this war finds no parallel in past history, and which is of the highest importance for the conduct of future wars. I refer to the great use which was made of hasty fortifications, in connection with modern firearms."

General Skobeleff, who seldom failed to carry the numerous entrenched positions he attacked, said that in every attack there was a critical moment when the reserves must be thrown into the fight either to re-establish confidence or to confirm success. This moment has arrived when there are any signs of wavering on either side. It should also be borne in mind that a vital point has not only to be carried, but to be held when captured, and made secure against counter-attack, and that during the final rushes the assailants lose whatever support they may have secured from the oblique fire of troops co-operating on their flanks, as well as that from the artillery fire which has been directed over their heads against the defenders.

Fourth Stage.

At the moment of closing on the defenders' position, all three arms must be able to co-operate. The different arms of the service should never fail to recognise that each only exists for the other, and that the efficiency of an army is measured by the product of the efficiency of each arm.

The guns must be prepared to move forward (not necessarily on the flank) as their infantry advances, and to take up fresh positions, if necessary, even alongside of it within 900 yards of the enemy, which is the dangerous zone of the defenders' rifle-fire.

The cavalry must be ready to sacrifice itself in

the event of a repulse, in order to gain time for its beaten infantry to be rallied, or for a rear guard to be extemporized, should a retirement be deemed expedient.

In the event of success, it is equally imperative for the other arms to be with their infantry: the artillery to help to make good the captured positions against counter-attack, and to shell the retreating enemy; the cavalry and horse artillery to pursue and reap the full fruits of the victory.

The Pursuit.

When the enemy retires all formed bodies of infantry as they come up will follow him with well directed volleys, and when the enemy retires in mass a portion of the victors' artillery will fire at his retreating troops with Shrapnel, while a portion should endeavour to pass by his flanks to threaten his line of retreat. The subsequent fruits of a victory depend chiefly on the rapidity and energy displayed by the cavalry and horse artillery sent in pursuit. These troops must endeavour by every means to prevent the enemy from occupying defiles and reorganising; under all circumstances the cavalry must keep touch with the beaten army, and if checked by the rear guard, should try to work round it.

Artillery Fire Tactics in Attack.

Repeating rifles have increased the necessity which previously existed for the preparation, by artillery fire, of the attack, but smokeless powder has materially increased the difficulty of determining the distance and the direction whence the fire, not only of the defender's infantry, but also of his artillery, comes.

In the attack on a position all the assailants' batteries should be deployed before beginning the action, and the batteries should be massed, as far as the ground

permits, for the sake of unity of command and simultaneous concentration of fire.

In attack artillery fire should first be directed upon the defenders' guns. The distance from the enemy at which the first fire position should be taken up will depend on the efficiency of the artillery, the nature of the ground, the state of the weather, and the requirements of its own infantry. The guns must be advanced to within effective range, and the greatest results should be aimed at being obtained in the shortest time. As soon as the enemy's artillery fire has been got under, the fire of the assailants' artillery will be concentrated on that portion of the defenders' position which the commander intends to carry, and henceforward the fire of the artillery will be devoted to the support of the infantry attack. If necessary for the support of the infantry, batteries may accompany it up to the closest ranges. Guns should, however, change position as seldom as possible during an action, as they are silenced and very vulnerable when moving. It is therefore important to take up each time a position which will enable their fire to be, not only at once, but for some time, effective.

It is most desirable if the artillery fire on the point of attack can be directed from a flank; but, except in small affairs, it is not often possible for the artillery to prepare the attack from a position on its flank.

If occasion arises, artillery must not hesitate to fire over its own infantry. Care must be taken when firing over the heads of infantry, since they may possibly suffer from either premature shells, or from the effects of shot bursts.

"Infantry which are 900 yards in front of the guns are safe from the former, and run no risk from the latter when they are 400 yards from the target." ("Field Artillery Drill.")

"Artillery should not, as a rule, come into action at less than 1,600 yards from infantry of the enemy which is not engaged with its own infantry, though in the latter phases of the combat, or in cases of emergency, it should not hesitate to advance to the very closest quarters." ("Field Artillery Drill.")

Horse artillery batteries should be used for rapid movements to the front or flanks. If the assault is successful, part of the artillery should push on into the captured position, in order to aid the infantry in retaining it.

As soon as the enemy retires beyond the most effective range, the bulk of the field artillery must follow him up, the horse artillery batteries in conjunction with the cavalry acting very vigorously on his flanks.

If the infantry attack fails, the most advanced artillery must cover its retreat and endeavour to stop the pursuit of the enemy.

"The Field Artillery Drill," 1889, divides the attack of artillery, for descriptive purposes, into six stages; but very properly adds that, in practice, these stages will seldom be distinctly divided, nor will they be present in every action. They are as follows :—

The initiatory stage.
The artillery duel.
The preparation of the infantry attack.
The support of the infantry attack.
The advance into the captured position.
The pursuit.

Attack over Open Ground.

Infantry, when advancing over open ground to attack a village or entrenchments, should not open fire until within 600 yards. The time is better spent

getting over the ground rapidly than halting to fire at unknown distances at an inadequate target. If infantry only commences to fire when within 600 yards, it will not be left without ammunition at the critical moment just after the position is captured. Prior to the infantry advance the guns of the defenders will have been engaged, and until they have been, in a measure, silenced, the assailants' artillery should rarely be moved forward. They should then advance to within 1,600 yards, or as close as ever they can. Meanwhile the infantry will have been advancing obliquely to within 600 yards, taking care not to mask their own artillery fire. As soon as the infantry open fire, the guns should again move forward to within 1,000 yards, and keep up a continuous fire until clouded by their own infantry making its final rush over the last 100 yards. The fire of the guns should then be directed over the heads of the assaulting infantry against the defenders' reserves, and thus keep up one continuous roar of artillery until their infantry have gained a footing.

Every halt in the open before an entrenched position means death to many brave men; these halts should, therefore, be as few and as far between as the condition of the troops justifies. Young officers must never forget, when leading their men forward to attack, that ample allowance should be made for the extra weight carried by the latter.

The Encounter between Troops in Motion.

"In the offensive, a fundamental distinction should be drawn between the attack of a fully developed front, well prepared for defence, and an encounter between troops in motion.

"The encounter between bodies of troops in motion,

so frequent in war, develops itself from the depth of the column of march, against an opponent who is likewise deploying for action.

" In such engagements the leading troops should gain the requisite time and space, to enable the columns to deploy.

" On these occasions, the subordinate leaders should only exercise such a measure of independent action as is admissible without interfering with the connection between the progressive deployment of the whole force, and that of the leading troops. It is in this spirit that the company at the head of the battalion acts. The same occurs at the head of the advanced guard, etc. On the one hand, the object is to forestall the enemy in his deployment for the fight, whilst on the other hand, the independent action of the leading troops should be restricted, so as not to interfere with the intentions of the commander.

" It thus becomes apparent how important it is that the commencement of the encounter between troops in motion should find the commander at the head of the column. The simultaneous issue of orders for the conduct of the fight, and for the deployment into position from column of route, will thereby be rendered possible.

" The attack should be delayed as little as possible, by the deployment for the fight. Preparatory extensions at the halt only cause delay.

" The preliminary phases of engagements will generally bear this character.

" Should the enemy have nearly completed his deployment, or should he be already partially in position, the extension of the foremost troops should be carried out with increased caution. The front should be increased by the continued deployment,

and the commander's orders should be awaited. In order to issue those in time the commander should unquestionably be on the spot."*

Musketry-Fire Tactics in Attack.

The limits of the employment of musketry-fire, according to our "Field Exercise," "depend on a knowledge of the range, the skill of the firer, and the formation of the ground; and *in the field*, the moral condition of the troops, and the quantity of ammunition at their disposal must also be taken into consideration."

According to the same authority, distances may be classified as follows:—

Short.—Up to 400 yards.
Medium.—400 to 900 yards.
Long.—900 to 1,700 yards.
Extreme.—1,700 to 3,100 yards.

"The preparation of the attack at 'long' distances belongs to the artillery; it is only in exceptional cases that the infantry can take part in it.

"A premature opening of fire by the fighting line may lengthen the action, and lead to a deficiency of ammunition at the final stage, and thus weaken the moral energy of the assailants.

"In open ground the troops in the fighting line should only begin firing at 'medium' distances.

"On broken and covered ground they may advance to quite 'short' distances without firing.

"In the attack volley-firing by sections should be employed as long as possible. It cannot be used by troops during the advance in the final stage, where any halt would delay the vigorous offensive required at the moment. Volleys should also be used by troops

* German Field Exercise, 1888.

specially detailed for the purpose, and placed on commanding positions on either flank to cover the general advance.

"When a position has been carried, volley-firing is the best fire to be used in the pursuit, and when getting the men in hand again.

"A dropping fire can produce no useful effect, and has the drawback of slackening the advance.

"The fighting line should be reinforced as the fire can be made to tell; it is essential, in fact, to bring from the commencement an effective concentration of fire on the enemy's position.

"The useful effect of musketry-fire depends on its precision, combined with rapidity, but it is better to seek such effect from accuracy, and from a sufficient number of rifles brought up into the line than from undue rapidity from a smaller number."

Fire-discipline, especially when the attack commences, should be the most important part of an infantry soldier's training, for it is mainly by fire action, properly directed, that victories are won. When firing once begins, men get easily out of hand, unless restrained by an iron discipline, and the loose formations of modern tactics necessitate more self-restraint on the part of the men than formerly. Troops may be styled well-disciplined in fire tactics, when they do not waste ammunition, when they adjust their sights properly, and concentrate their fire as directed.

"Lieutenant Greene, in his chapter on the 'Attack or Fortified Positions,' quotes the following order of the day given by General Skobeleff to his troops, the evening before the battle of Lovtcha, September 3rd, 1877, when he states that 22,000 Russians attacked about 15,000 Turks. The artillery cannonade lasted from 5 A.M. to 2.30 P.M. The assault was then made

by the infantry, formed in two lines of company columns, preceded by skirmishers. The attack was completely successful, and by nightfall the infantry had destroyed one-fourth of the defenders and put the rest to a disorderly flight.

General Skobeleff's Order of the Day.

"In the first part of the action which is about to take place the preponderating *rôle* belongs to the artillery. The order of the attack will be communicated to the chiefs of batteries, who are recommended not to scatter their artillery fire. When the infantry moves forward to the attack the artillery will support it with all its efforts. Special vigilance is then necessary; the fire will be accelerated if the enemy should unmask any reserves, and pushed to its utmost limit if the attacking column meets any unforeseen obstacles. When the distance permits Shrapnel will be used against the enemy's trenches and troops. The infantry must avoid disorder in the struggle, and make a careful distinction between the forward movement and the attack. Do not forget the necessity of aiding your comrades at any sacrifice. Do not waste your cartridges. Remember that the nature of the country renders it very difficult to supply ammunition. I mention once more to the infantry the necessity of order and silence in the fighting. Do not cry 'hurrah' until you are close to the enemy and are preparing to charge him with the bayonet. I call the attention of all the soldiers to the fact that in an intrepid attack the losses are a minimum, and that a retreat, especially a retreat in disorder, results in great losses and in shame.

"This order will be read to every company in so far as it concerns the infantry."

"At the risk of repetition, it may be desirable to

summarize the principles which it has been the writer's endeavour to illustrate in this chapter on the attack of a position. In the form of axioms they may be more easily remembered:—All attacks should have 'decisive' results in view; therefore, attack vital points, and endeavour to bring masses to bear upon fractions.

"Demonstrate against and threaten other points; but remember that all feints, to be useful, must be closely combined with real attacks.

"Remember that an enemy must not only be driven from his positions, but rendered incapable of fighting again; and never attack with a fraction of your force when a short delay will enable you to attack with the whole.

"Protect your flanks with cavalry, and bring your massed guns within decisive range of vital points as quickly as possible.

Avoid too great intervals in your line of battle; avoid disseminating your forces if the enemy can mass his troops against your fractions. Conceal your movements, and endeavour to turn a position in preference to forcing it in front. When closing on a position, the three arms, each well supported, must co-operate.

"The co-operation of the three arms is more important than their individual performances.

"Infantry should not assault a position until it has been well shaken by artillery.

"If the flanks of a position are approachable, they should be turned by cavalry and horse-artillery, and, if possible, by infantry also.

"Never allow a beaten opponent to rally or recover himself, but follow him up, hitting him harder and harder as he gets weaker, until he surrenders."

Plate IX. is intended to show the dispositions made by the commander of a division consisting of 7 battalions

of infantry, 3 battalions of artillery and one regiment of cavalry for an attack upon a position :—One brigade is told off to turn the enemy's right flank, the other holds him engaged in front. Each brigade forms its "first line" of 2 battalions, its "second line" of one battalion, and one battalion forms the "third line" and acts as a general reserve. One battery threatens Ridgway Farm and the wood in front. The remaining guns, massed, open fire on enemy's artillery. Three squadrons cover the flank movement, and one is held in reserve where it can act as required, and keep up communication behind the two brigades.

Test Questions.

Principles of Attack and Defence.

I. What is the best use to make of cavalry when acting on the defensive?

II. In an attack by the three arms combined how should the artillery act during the different phases of a successful action?

III. Why is it more necessary now than ever that in the attack on a position artillery should have an adequate force of infantry to co-operate with it?

IV. Give in general terms the *rôle* of the three arms engaged in the defence of a position?

V. Under what circumstances might it become necessary for artillery to expose itself to the fire of the enemy's infantry?

VI. What are the general principles on which all attacks should be based?

VII. In occupying a position, under whose immediate orders should the general reserve be, and state how, and with what specific objects, it should be posted?

VIII. Explain why the modern system of defence requires a deeper occupation to be adopted than formerly?

IX. State briefly what, in your opinion, are the requirements of a good defensive position.

X. In preparing and carrying out an attack, what special points should be regarded?

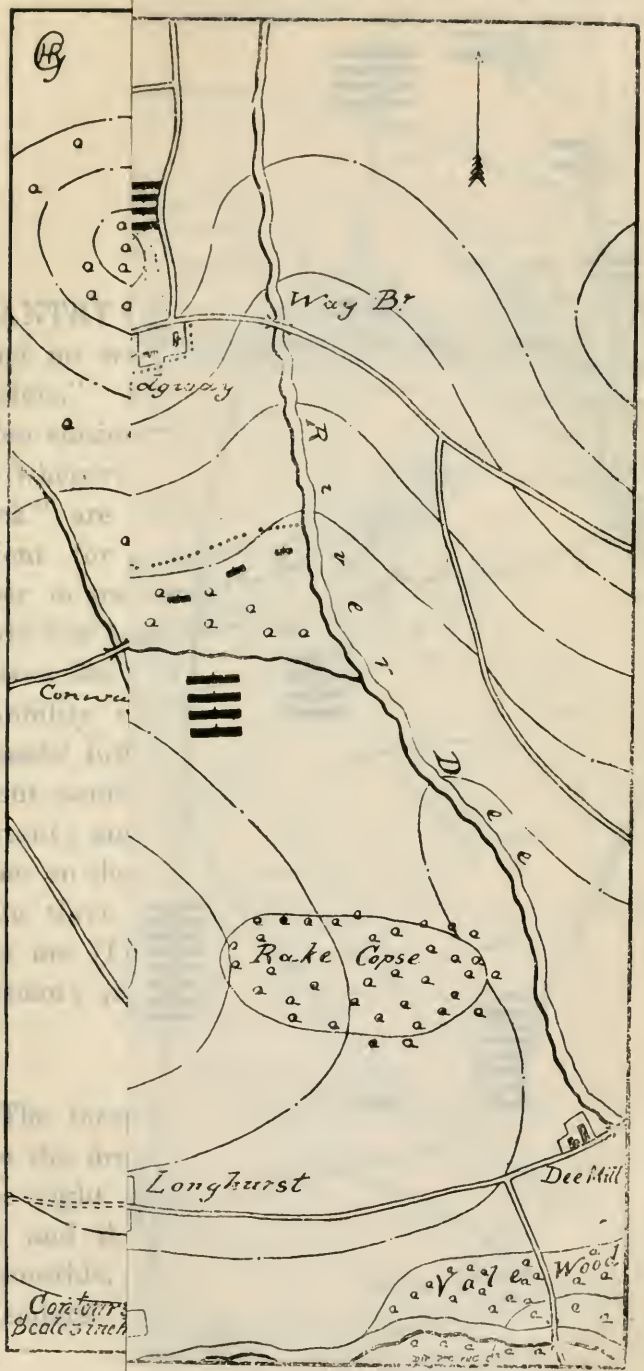
XI. What are the advantages of the attack over the defence?

XII. How ought the defenders to be able to reduce the assailants (assumed to be in considerably superior numbers), so as to engage them on equal terms with a fair prospect of not merely repelling their onslaught, but of assuming the offensive?

XIII. The general disposition of infantry for the advance to the "attack" is in three lines. Describe briefly the duties of each line?

XIV. In defending a position in ordinary country how many men a mile ought there to be? State generally how you would dispose of them.

XV. Describe briefly what should take place when troops prepared to act on the offensive encounter a body of the enemy's troops in motion?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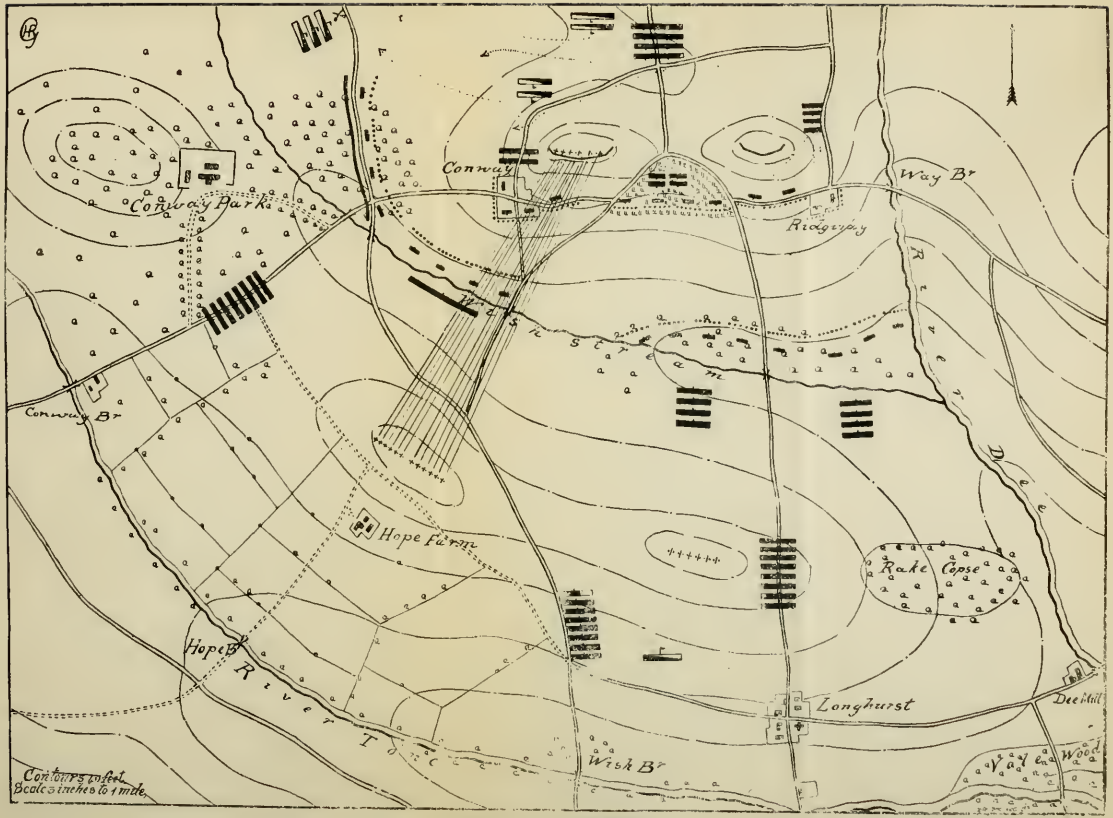

ATTACK ON A POSITION.

CHAPTER VIII.

Infantry.

INFANTRY is the only arm that is really independent, and no writer has yet called it "auxiliary" or "obsolete." It can fight under any circumstances, whether stationary, advancing, or retiring, and is able to go wherever a man can climb. Its fire-action and "shock" are both formidable, and are at all times sufficient for its own protection. Moreover, it is cheaper to train and equip than the other arms, and requires less supplies in the field. Its rate of marching regulates the movements of armies, and, though slow, its mobility need only be measured by that of an opponents' infantry. Whatever the proportion of the different arms, the *rôle* of the infantry is the most important; and on it will fall the brunt of warfare, whether on the march or on the battle field.

The three things essential to a trained infantry soldier are (1) To be able to march; (2) To be a marksman; (3) To be able to use his spade.

Artificial Cover.

"The increased importance of artificial cover, is due to the fire-action of the modern rifle. Prepared at the right time and place, the service it renders troops and their leaders is important, and at times indispensable. It should, however, be subservient to the leaders' plans, and should in no way govern them.

CHAPTER VIII.

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"The latter is the case when entrenchments are commenced before the commander's plans are definitely formed. The premature strengthening of ground is positively detrimental, and restricts freedom of movement.

"Even in the attack, entrenching tools may be of great service in the retention and strengthening of positions gained." *

The rifle fire of the defenders of a position may, under certain conditions, be effective at extreme ranges, and its demoralising and bewildering effect on the assailants will in future be increased by the absence of smoke to indicate where the fire comes from.

First Line of Defence.

As soon as the direction of the enemy's attack is ascertained, the distribution of the first line of infantry, acting on the defensive should be adapted:—

(1) To the configuration of the ground.
(2) To the number of rifles available.
(3) To the object to be obtained.
(4) To the nature of the enemy's attack, and of the arms he fights with.

Heights, ravines, woods, defiles, folds in the ground, and hasty field redoubts, and entrenchments, may all have to be included in a general line of defence, and each locality will necessitate a different distribution of rifles; but in all cases the main object to be considered is the most effective development of fire.

Whether the defence is intended to be combined with counter attack, or is undertaken simply to repel the enemy, the first, or fighting line, should always be strong enough from the outset to keep a firm hold on

* German Field Exercise.

the position. With this object, the fighting line should be divided into sections for defence, each section arranging for its own supports and local reserves. The "Drill Book" says: "The first line must be as thick as compatible with the free use of the rifle at any point that is threatened, as soon as the attacking force comes within effective musketry fire. The supports and reserves will be placed concealed from the enemy's view, as much as possible under cover, and near at hand to feed the firing line as casualties occur, or to move to important places requiring additional strength;" but does not, as in the attack, lay down any defence formation more or less applicable to all occasions, and when candidates for examination are sometimes asked to explain and illustrate by a diagram how a battalion should be posted in the first line of defence, this omission in the "Drill Book" appears to have been overlooked.

Without in any way preventing a commander from disposing of his firing line in such a manner as he may consider best suited to the locality he is called upon to defend, the following simple method of posting infantry in the first line is suggested, as being capable of the utmost expansion, and suitable to all occasions.

Defence formations are only applicable to the first line, and the following conditions should be kept in view :—

(1) Every possible advantage should be taken of the accidents of ground, and time and means available for constructing shelter trenches.

(2) Each section of defence should be formed as a separate unit of command, arranging for its own supports and local reserves.

(3) One half of the men of each section should be in reserve; of the remainder, as many rifles as can be effectively used and constantly maintained should be posted as firing line and supports.

(4) There should be no mixing up of fire units.

A central battalion in the first line of defence will be divided into two half battalions and distributed as follows:—

The commanders of half battalions will each detail one double company to furnish firing line and supports. The three inner sections of each company being distributed in the firing line, the outer sections posted in rear of the outer flanks of their respective companies.

As casualties occur, the commanders of companies will close their men inwards,* on the centre of the double company, which will be marked by a guide. The supports will be introduced into the firing line on the flanks as casualties occur, and the sections kept intact under their own officers.

An interval of six paces will be kept between half battalions.

The remaining two companies of each half battalion will be in local reserve.

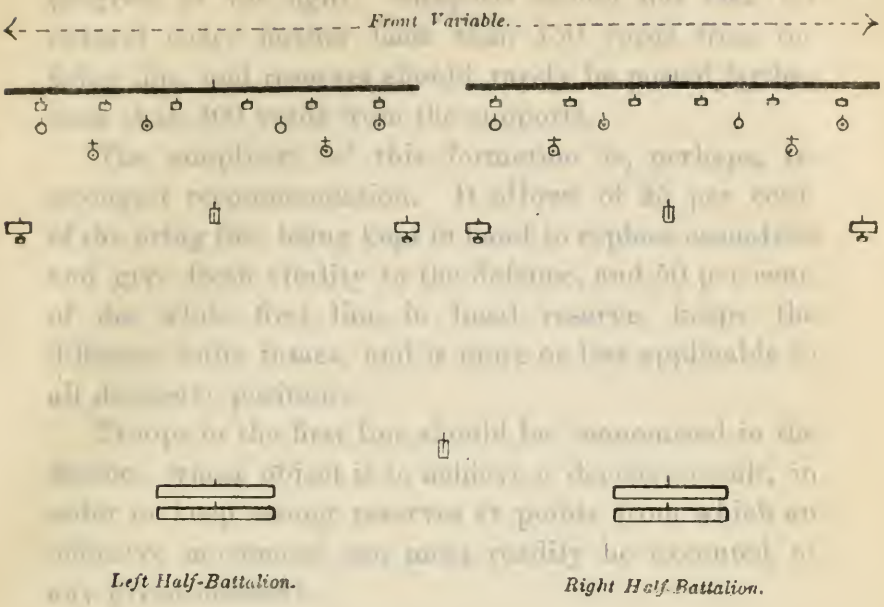
The front allotted to each battalion will be indicated by brigadiers, under instructions from the general commanding the division, who, in making his general dispositions, will be influenced by the ground, the number of troops at his disposal, and the nature of the attack.

The distances between firing line and supports, and between supports and reserves, will be regulated by the officers commanding battalions, and, within certain limits, will depend on the cover available, and the

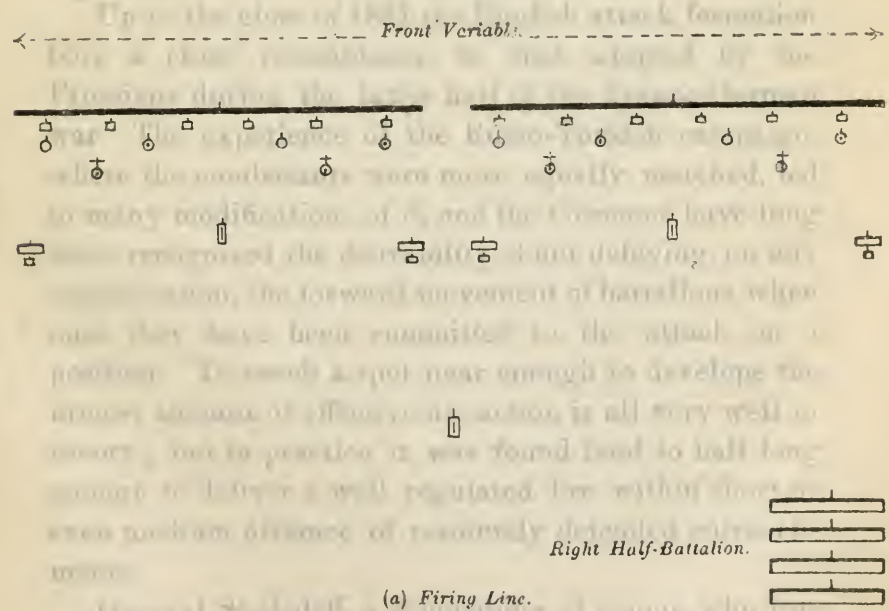
* This closing inwards is sanctioned by the "Infantry Drill Book," 1889, page 400, and acts as a check against too rapid firing.

DEFENCE.

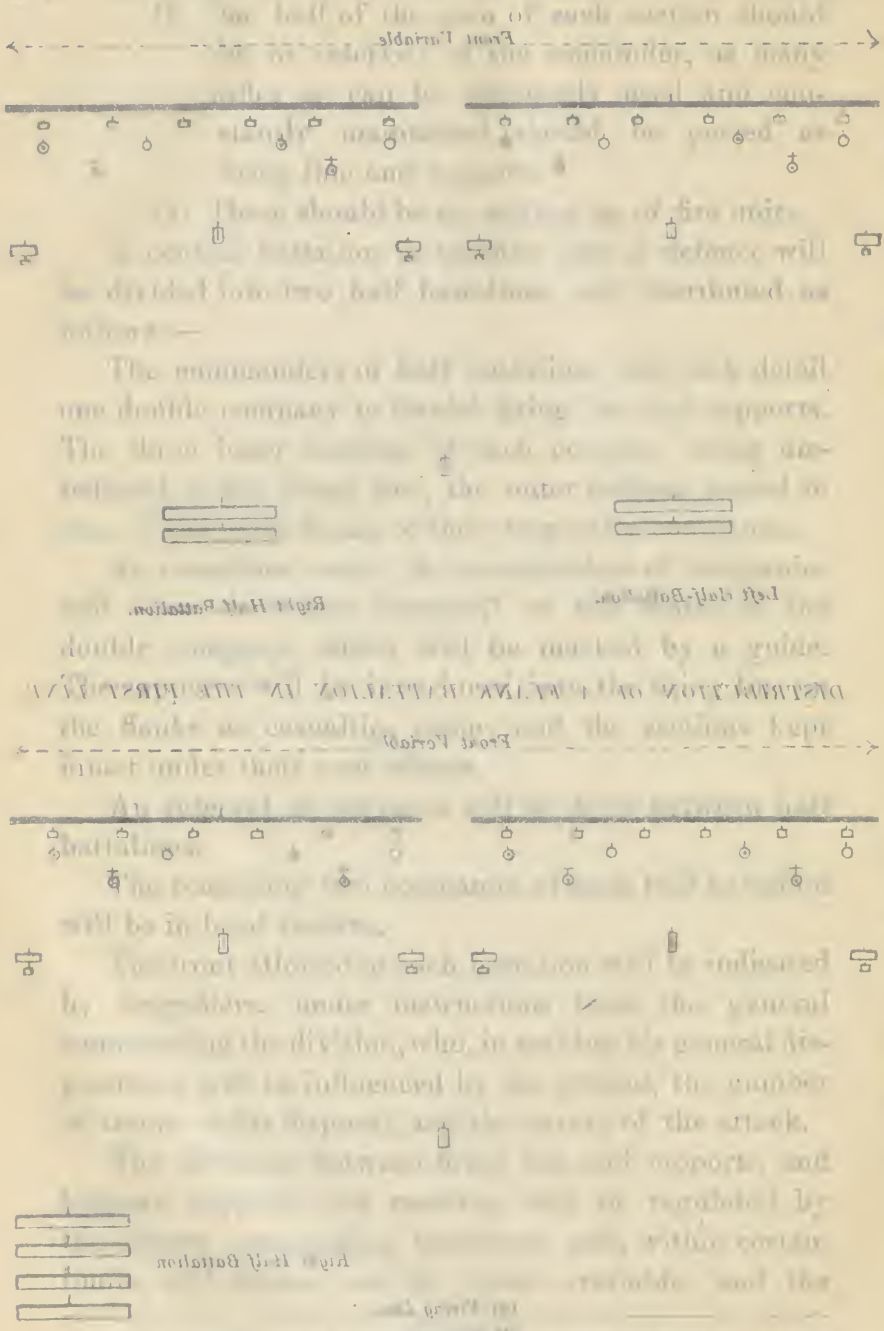
DISTRIBUTION OF A CENTRAL BATTALION IN THE FIRST LINE.



DISTRIBUTION OF A FLANK BATTALION IN THE FIRST LINE.



(a) *Firing Line.*
(b) *Supports.*
(c) *Reserves.*


From Trenches
(a)
(b)
(c)
Left Half-Battalion.
Right Half Battalion.
DISTRIBUTION OF A BATTALION IN THE FIRST LINE
From Trenches
(a)
(b)
(c)
Right Half Battalion
(c) Reserve
(b) Supports
(a) Firing Line

progress of the fight. Supports should not seek for natural cover farther back than 150 yards from the firing line, and reserves should rarely be posted farther back than 300 yards from the supports.

The simplicity of this formation is, perhaps, its strongest recommendation. It allows of 25 per cent. of the firing line being kept in hand to replace casualties and give fresh vitality to the defence, and 50 per cent. of the while first line in local reserve, keeps the different units intact, and is more or less applicable to all defensive positions.

Troops in the first line should be economised in the defence whose object is to achieve a decisive result, in order to keep strong reserves at points from which an offensive movement can most readily be executed at any given moment.

The Attack.

Up to the close of 1887 the English attack formation bore a close resemblance to that adopted by the Prussians during the latter half of the Franco-German war The experience of the Russo-Turkish campaign, where the combatants were more equally matched, led to many modifications of it, and the Germans have long since recognised the disirability of not delaying, on any consideration, the forward movement of battalions when once they have been committed to the attack on a position. To reach a spot near enough to develope the utmost amount of effective fire action is all very well in theory; but in practice it was found fatal to halt long enough to deliver a well regulated fire within short or even medium distance of resolutely defended entrenchments.

General Skobeleff, a commander of genius, who was at the time of his death the most experienced authority

on this subject, decided in 1877 that the only formation in which troops can be expected to carry earthworks is in successive lines of skirmishers, pressed on one after the other at all hazards. This is the principle of the present English system of infantry attack. Lieutenant Greene thus describes the two direct front attacks made by Skobeleff's troops at Plevna, September 11th, 1877, and in rear of Skipka, January 8th, 1878 :—

"The troops were formed under shelter, between 2,000 and 3,000 yards from the Turkish lines, in battalion masses (double column of half-companies on the centre). In the beginning of the action, the rifle company of each battalion was sent forward in a thin line of skirmishers, and one platoon (quarter-company) in column of half-platoon behind the line, at a distance of not more than 50 paces and constantly replacing its losses. About 200 paces behind the skirmishers came the first battalion, which moved forward in line, not touching elbows, but with intervals of about two paces (or less) between the men—a strong skirmish line, in fact—each company having three-fourths of its strength in line, and one-fourth just behind it, in platoon column, to replace its losses. The men moved forward, presenting a general alignment, but each man taking advantage of any shelter that lay in his path, and firing from behind it, and then moving forward again. Another battalion, followed in precisely the same order, at a distance of about 300 paces, so that the men could feel that there were supports coming behind them.

"The remaining battalion of the regiment was held in hand by the division commander until the fight developed itself, and it could be seen where the most resistance was met, whether the enemy was bringing any troops on the flanks, etc.; the battalion was then directed on the point where it was most needed.

"The regiments on either side were sent forward in the same manner.

"Meanwhile, the reserve regiment of the division (a Russian regiment is three or four battalions, according to whether it is a line or a rifle regiment), always under the control of the division commander, was kept under shelter as near as possible to the line; as the troops already engaged, which had now merged into two lines (and at points where the resistance was greatest into one), began to move slowly, to halt, to waver, the reserve regiment, or a portion of it, was sent forward rapidly to the point where the fighting was hottest."

Whatever the actual formation may be, the object of all attacks must be to reach and capture a position held by an enemy, presumably intrenched, and certainly belching forth fire, with comparative safety. When it is remembered that the infantry fire of the defence extends under favourable circumstances to 1,700 yards, and that the unaimed fire has been known to inflict severe losses up to 3,000 yards, the absolute necessity for the assailants to get over this fire-swept zone as quickly and with as little loss as possible, is so apparent, that every other consideration pales before it.

The fire of the assailants may never become really effective at all, not even within the traditional 300 yards of an entrenchment. No troops advancing over the open can be expected to halt, and direct their fire with cool precision at the heads of the defenders crouched low behind their earthworks. The time will be better spent in getting over the ground anyhow than in halting to fire at an inadequate target, and the issue of a stubbornly contested fight may still often have to be decided with the bayonet.

The infantry fight is, as a rule, decided by fire action, and this can only be developed in extended order.

The extended line is therefore the principal fighting formation of infantry.

In order to prevent the front being unduly extended during the course of the fight, or a premature mixing up of units, a comparatively narrow front is required at the commencement of the attack. In any stage of the attack on a position, the front occupied should not be greater than can be occupied in spite of ordinary casualties by a fighting line of constant density, and one which can maintain its fire action throughout. The German Field Exercise says :—" The disposition of the battalion in attack is regulated by the object of the fight and by the ground. No general rule exists as to whether a battalion should have all its companies or only one in the front line. Whether it should enter into the fight formed in one, two, or three successive lines, the commander possesses a free choice according to circumstances.

" The entire battalion may deploy for the fight at the halt, on any given company, or if required, it can take up its position on the move. The former will be the rarer case; it should, however, be equally practised. None of the various formations should be turned into fixed rules. In the majority of cases it will be advisable to extend the companies only as required retaining the remainder of the battalion in hand. For example, when a fight is commenced on the march by the leading company of the advanced guard, and it becomes necessary to extend their front to a flank, a second company is employed for this purpose. If it can be gathered from the progress of the fight, on which flank the main body should be posted, the troops remaining in hand will be formed up in rear of it. The circumstances which influence the manner of co-operation of the companies, as well as their extension

and relation to each other during the fight may vary considerably. The battalion commander will always be in a position to meet these circumstances, if he maintains a deep formation, and only employs his companies when they are clearly required, he should employ a sufficient number of troops at the proper time, but should guard against their premature absorption."

Our Drill Book says:—"The front allotted to an attacking force should not exceed that which the troops composing its first line would cover, were they deployed with the intervals allowed between units in the firing line, viz. 6 paces interval between companies, 12 paces between batallions, 30 paces between brigades, and 60 paces between divisions." This arrangement gives to a battalion attacking alone, *i.e.*, when it provides its own second and third lines, a front of 212 paces,* which is equal to the front of the four companies composing its first line, if in line + 12 paces allowed for intervals. For a battalion, when posted all in the first line, it allows a front of 424 paces, which is equal to the front of eight companies in line + 24 paces allowed for intervals.

Reinforcements become necessary when the fire action of a fighting line requires to be sustained or increased, or when a fresh impulse is needed to enable it to continue its advance. In the case of infantry *v.* infantry the result depends on the musketry training, fire discipline, and the direction of the fire of the troops engaged.

The distance between the lines in attack formations is regulated by their formation, the weapons of the enemy, and the ground to be traversed in reaching him.

The formations as laid down in the "Drill Book" are

* When a battalion attacks alone, half-company intervals are allowed for on the flanks of the two companies in the firing-line.

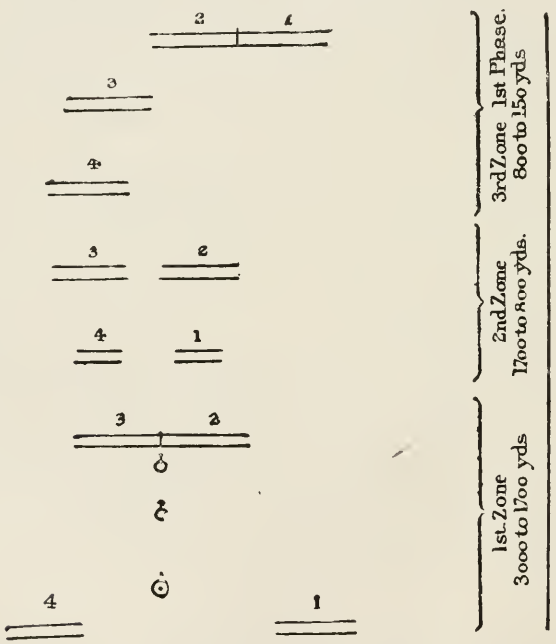
only intended to be illustrative of the principles which should govern all attacks; a too rigid observance of details would, in action, be against the spirit of modern tactics which is, that *all formations of attack should be carried out in accordance with the object in view, the available strength, and time, and the nature of the ground.*

Infantry Attack Formations.

The Company is divided into four sections, and the fighting front of a company is 100 paces.

The extension takes place in the two centre sections of a company, and the two outer sections support and find the firing line.

Rough Diagram of a Company passing through the three Zones.

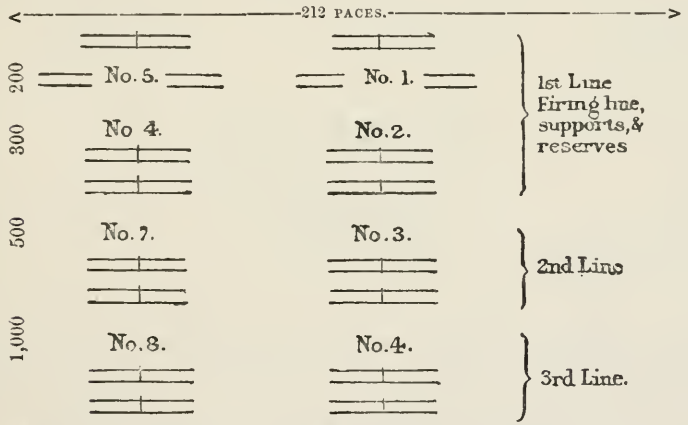


The supporting sections are placed as much as possible in rear of the outer flanks of the leading sections. As losses occur, the firing line closes to the centre. The supports come up on the outer flanks.

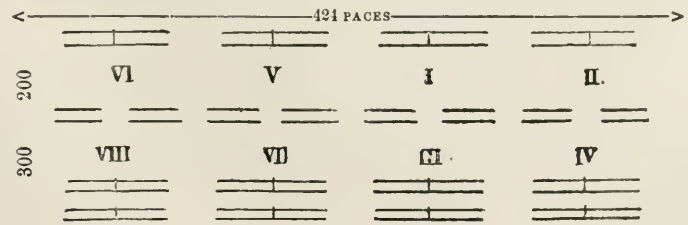
On entering the second zone the firing line extends to 1 pace between files; at 900 yards from the position to 3 paces. The supports extend to 1 pace interval.

On entering the third zone effective range is reached, and the captain has to determine whether he shall open fire, and what shall be its extent and its object. Volley firing is the most effective, and should be maintained as long as possible; independent firing should be discouraged until the final stages.

A Battalion moves to the attack from double column, column, or from line. The front of a battalion attacking alone is 212 paces, which allows an interval of 6 paces between the extended companies in the firing line, and half an interval on either flank of the two companies.

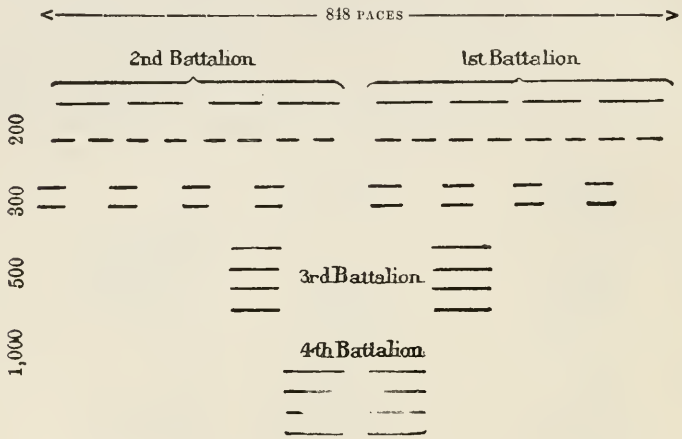


When the whole battalion is in the first line, and only supplies firing line, supports and reserves, parts of four companies, are extended, and the attacking front is 424 paces, which allows for 3 company intervals and half an interval on either flank.



Diagrams numbered II., III. and IV. are illustrative of the different stages in the attack of a battalion acting alone, and all attacks, whether of brigades, divisions or army corps are regulated on precisely the same principles, the front varying according to the number of battalions ranged along side of each other in the first line.

A Brigade, consisting of four battalions, moves to the attack on a front of 848 paces. The third battalion in the second line, and the fourth battalion in the third line.



In order to keep each unit in the firing line, separate and distinct intervals are provided as follows:

Between companies, 6 paces.
Between battalions, 12 paces.
Between brigades, 30 paces.
Between divisions, 60 paces.

A too rigid adherence to the regulated intervals in the fighting line should not be insisted on.

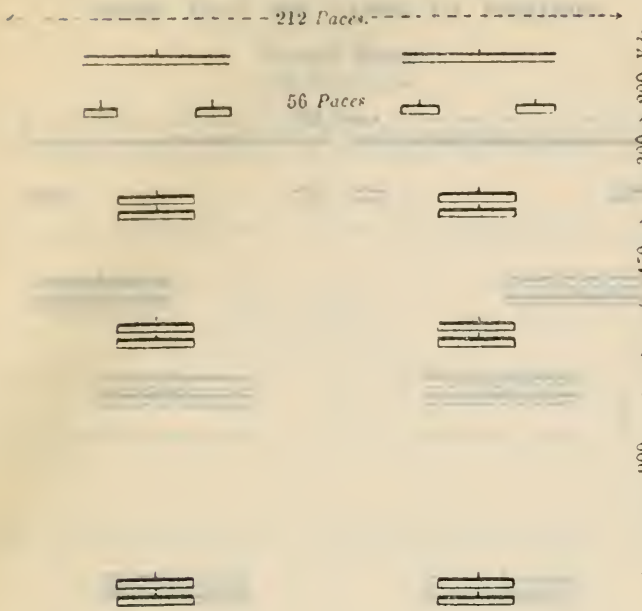
A division (two brigades) with four battalions in the first line, attacks on a front of 1,726 paces=front of 32 companies + intervals between companies, battalions, and brigades.

[Diagram II.]

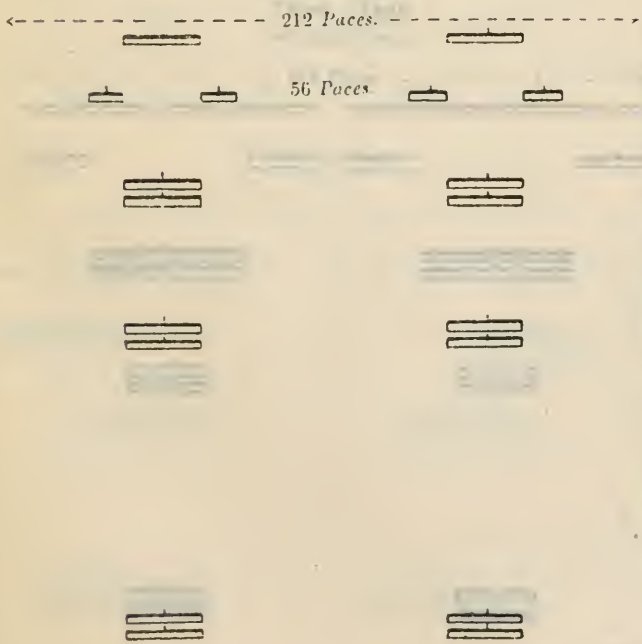
BATTALION ATTACKING.

SECOND ZONE 1700 TO 800 YARDS.

Second Stage.

1700 to 900 *Yards.*

FIRST ZONE 3000 TO 1700 YARDS.

First Stage.



EXPLANATION.

Second Stage.

FIRST LINE.

Firing Line extends to one pace between files.

Supports move in line or extend to one pace between files, according to cover procurable, and the fire they come under.

Reserves extend if necessary.

SECOND LINE reduces its distance from First Line.

THIRD LINE proceeds as in First Zone, gradually reducing its distance from Second Line.

First Stage.

FIRST LINE.

The two centre sections of the leading Companies advance 200 yards, followed by the two flank sections in support.

The Companies in reserve of First Line follow the supports at 300 yards in Half-Company columns.

SECOND LINE follows at 500 yards' distance from Reserves of First Line.

THIRD LINE follows about 1000 yards in rear of Second Line.

DIAGRAM II.

BATTALION ATTACKING.

SECOND ZONE 1700 TO 800 YARDS.

Second Stage

FIRST ZONE 3000 TO 1700 YARDS.

First Stage.

EXPLANATION.

Second Stage.

THIRD LINE.

First Stage.

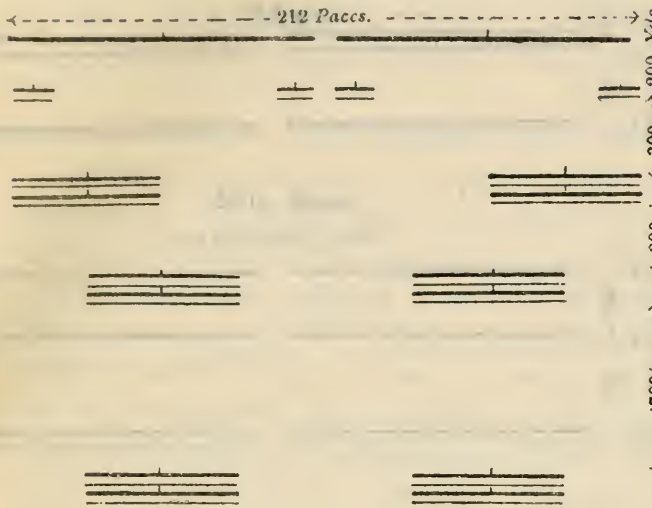
FIRST LINE.

[Diagram III.]

BATTALION ATTACKING.

THIRD ZONE 800 YARDS TO POSITION.

Fourth Stage.

800 to 500 Yards.

EXPLANATION.

Fourth Stage.

FIRST LINE.

Firing Line assumes rank entire, and opens fire by volleys or by order.

Supports are being gradually absorbed on the flanks.

Reserves incline towards the flanks of the Companies they are supporting.

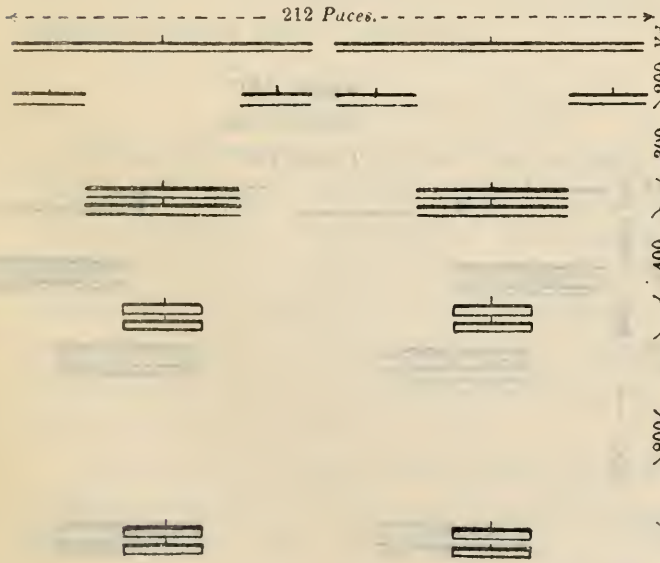
SECOND LINE extends to one pace interval between files, and continues to reduce its distance.

THIRD LINE reduces its distance from Second Line.

SECOND ZONE 1700 TO 800 YARDS.

Third Stage.

900 to 800 Yards.



Third Stage.

FIRST LINE.

Firing Line extends to three paces between files.

Supports advance with one pace between files.

Reserves extend to one pace between files.

SECOND LINE reduces its distance to 400 yards from Reserves of First Line.

THIRD LINE reduces its distance from Second Line.

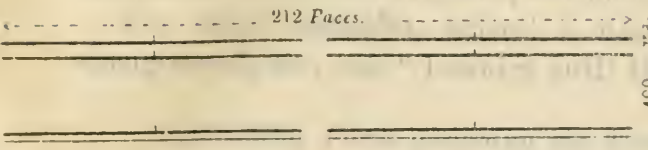
[Diagram IV.]

BATTALION ATTACKING.

THIRD ZONE 800 YARDS TO POSITION.

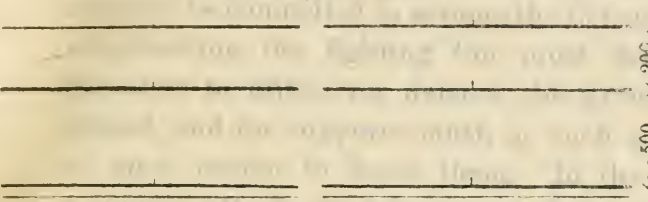
Seventh Stage.

The Charge.



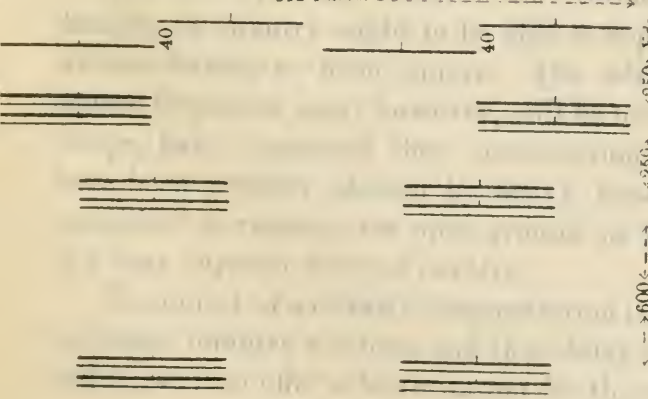
Sixth Stage.

150 *Yards from Position.*



Fifth Stage.

500 *to* 150 *Yards.*



EXPLANATION.

Seventh Stage.

SECOND LINE.

SECOND LINE doubles forward; on its approaching the First Line the latter ceases to fire, and the SECOND or ASSAULTING LINE passes through it and charges, followed by the original First Line.

THIRD LINE follows, prepared to confirm success or cover a retreat.

Sixth Stage.

FIRST LINE.

Firing Line ceases to rush, and forms line in rank entire; any Reserves not absorbed move up, and the whole line commences to fire independently.

SECOND LINE, on reaching 400 Yards from position, fix bayonets, forms rank entire, and doubles forward.

THIRD LINE extends to three paces between files and advances.

Fifth Stage.

FIRST LINE.

Firing Line advances by rushes, the Right Half-Companies always leading.

Reserves move up into Firing Line on flanks by Half-Companies.

SECOND LINE continues to gain ground.

THIRD LINE follows, reducing its distance from Second Line

BATTALION ATTACKING.

THIRD ZONE 800 YARDS TO POSITION

Seventh Stage

Sixth Stage

Fifth Stage

An army corps attacks on a front of 5,232 paces = front of 12 battalions in first line + intervals between companies, battalions, brigades, and divisions.

For other examples, where a flank has to be strengthened, &c., *vide* "Infantry Drill Book."

Attacking Force assuming the Defensive.

As it is a principle in "defence" to deliver counter-attacks, an attacking force may at any period of its advance be compelled to assume the defensive. Officers commanding the fighting line must, therefore, be on the alert to utilize for defence the ground they have gained, and the supports must, in such a contingency, at once hasten to assist them. In the case of such a counter-attack, the advantage of the defence passes from the enemy to the original attacking force, and the latter must bear in mind that, whereas in the attack their first object was to reach, with a minimum of loss, a point near the enemy's position, whence the final attack could be made, their object, as a defending force, should now be to pour the greatest amount of effective fire on those attacking.

Infantry versus Cavalry

It is now generally believed that trained and well-disciplined infantry ought to be able to repulse cavalry without having to form square. The adoption of the square formation may, however, still be necessary when troops have expended their ammunition; when they have been severely shaken by heavy losses; or when compelled to retreat over open ground in the presence of a very superior force of cavalry.

The object of a cavalry demonstration is often merely to induce infantry to close, and thus delay its advance, and cause it to offer a better target for the enemy's fire.

The most effectual manner of receiving cavalry is to bring the greatest available number of rifles to bear upon it, and the best formation is in line; a flank when threatened should be slightly drawn back.

Skirmishers may form groups or even rallying squares to receive cavalry, but supports will usually be able to repel cavalry in line.

Fire should be aimed low against attacking cavalry, and a little in front of it.

Infantry versus Artillery.

Infantry should endeavour to get as close as possible to artillery, by availing itself of the folds of the ground. Within effective rifle range of skirmishers, guns, unsupported by infantry fire, ought to suffer severely.

Cases may occur in which a good effect can be obtained by infantry fire on batteries up to 1,700 yards; but at long distances the fire of machine guns is more effective without so much expenditure of ammunition.

Infantry fire should first be directed on any teams that are visible when artillery is in motion, or unlimbering or limbering up, and then on the gunners. Units of infantry, when engaged against artillery, should concentrate their fire on one gun at a time.

When infantry are employed alone against artillery, a distinction must be made, if the artillery is engaged against artillery or not. If artillery is in action against artillery, a smaller number of infantry may be opposed to it.

Infantry should never take the place of artillery, or compete with artillery at extreme ranges.

Savage Warfare.

When small detachments of troops are called upon to face overwhelming numbers of recklessly brave

enemies, a shoulder-to-shoulder formation of some sort must be adopted; but to what extent it is advisable to sacrifice fire-action to ensure steadiness must be decided by the commander on the spot, and he will be influenced by the quality of his own troops and the character of his enemy. Judging from recent campaigns, to meet an overwhelming and enveloping attack, similar to that made by the Zulus, an advance in two-deep square, with supports at the angles, would appear to be necessary; but frontal attacks of badly armed though resolute levies, as in the Soudan, ought rarely to necessitate a denser formation than line, with the flanks thrown back in echelons when not protected by artillery. Unless the country is so close as to prohibit its use, the co-operation of artillery when fighting against uncivilised troops ought to compensate largely for inferiority in actual numbers. In savage warfare, both in attack and when acting on the defensive, the principle of massing batteries for the sake of unity of command and simultaneous concentration of fire, is strongly advocated in the Artillery Drill Book.

Infantry Fire Discipline.

In action, when the *critical moment* arrives (that is, when firing becomes individual), unless men are controlled by an iron discipline, they quickly get out of hand and fire rapidly, partly in order to distract their thoughts by making a noise.

The only way to check this fatal loss of time and direction, this useless expenditure of ammunition, is to train the men in peace-time to realise the necessity for a stricter drill and a sterner fire-discipline.

In the loose formation of modern warfare the control of a captain over his company must be exercised through the medium of his section commanders, and the

drill of the future must be that of the battle-field. When men are halted they ought to be able to hear their own section commanders whistle to "commence" or "cease" firing; and the section commander should be in constant communication by signal with his company commander; for, while he "regulates" the fire of his own section, it is to his company commander that he should look for direction. Section commanders must be trained to realise the great responsibility of their position, and how much depends on their individual influence over the men of their sections. They should endeavour to control the expenditure of ammunition, while regulating the adjustment of sights, and the proper direction and concentration of fire.

Mounted Infantry.

The objection to mounted infantry has been that it combines the defects of two arms, without possessing the highest qualities of either. This idea is a wrong one, for it seems to imply that mounted infantry are intended to fight on horseback.

The *rôle* of mounted infantry is to support cavalry; they should rarely precede and never charge cavalry.

Co-operating with cavalry, the *rôle* of mounted infantry will be a varied one. Covering the retreat of advanced cavalry when pushed back by a superior force. Supporting cavalry by holding defiles, bridges, etc., when reconnoitring, or when taking up outposts for a force when on the line of march. Acting in conjunction with a cavalry brigade or division in the presence of an equal or superior force of the enemy's cavalry, the co-operation of mounted infantry intelligently handled in accordance with the plans of the cavalry commander, ought to be very effective. With advanced and rear guards, and also in pursuit, the

presence of mounted infantry will furnish the power of resistance which cavalry acting alone, or even in conjunction with guns, does not possess.

In the absence of cavalry for reconnoitring purposes, or when, as is so often the case in savage warfare, owing to some sudden emergency, long distances have to be quickly traversed, mounted infantry will be invaluable.

Acting against cavalry mounted infantry should not allow themselves to be charged while mounted; if an attack is pending, they should make for the nearest cover, and endeavour to repel it with their rifle fire.

"The offensive tactics of mounted infantry will be while holding an enemy in front by the shooting of its fighting line, with its attendant support mounted, to pass the reserve quickly round so as to act upon the exposed flanks of the enemy, manœuvring from point to point in order the better to enfilade and outflank the enemy, and ultimately threaten to sever the communications in rear. If acting with cavalry, mounted infantry should have no reason to consider the probability of its flanks being in turn threatened, but in the absence of cavalry the flanks must be watched by patrols, and the supports be posted towards the exposed flanks."*

At all times, whether supporting advanced cavalry or guns, or acting alone or in conjunction with machine guns, the effective action of mounted infantry depends upon the efficiency of its rifle fire.

Orders for a Vedette of Mounted Infantry.

I. Immediately on getting to your post, find out the exact position of the enemy and what is known of his position and movements; also the whereabouts of your own piquet.

* Regulations for Mounted Infantry, 1889.

II. Remember the number of your piquet, the number of your post, and the number and positions of the posts on either side.

III. Learn the name and regiment of the commander of the outposts.

IV. Find out as best you can the name of any villages, hills, rivers or defiles that can be seen, and where the railways and roads lead to.

V. Don't forget the parole and countersign.

VI. Take notice of a branch of a tree or anything which points towards your proper front. If possible cut an arrow head on the tree or make some mark on the ground with stones to answer this purpose. This is especially important in stormy weather, as your horse will always turn his tail towards the wind, and it is very easy to lose your bearings.

VII. See all you can without being seen, and look out for clouds of dust, the glitter of arms, etc. Keep your ears open as well as your eyes.

VIII. If questioned by a superior, do not lose sight of your front or relax your vigilance while he speaks to you or while you speak to him. Vedettes pay no compliments.

IX. Allow no one except the commander of the piquet and the patrol to pass through the chain of vedettes or to loiter near it.

X. Halt all other persons at 40 yards, wherever they have come from, and direct them to the examining post. If they do not instantly obey, open fire on them.

XI. Challenge all persons by night, except the relief, the patrol, and your own officers, who shall be known to you by some private signal; order them to "Halt, advance one and give the parole and countersign." If necessary challenge twice, then fire.

A single vedette never quits his post unless driven in; if surprised, he fires at once to alarm piquet.

One man at a time of a double vedette may quit his post, but only for the following purposes—

(*a*) To occasionally patrol unseen ground between the vedette posts.

(*b*) In order to satisfy himself about anything suspicious or unusual which he cannot find out without going forward.

(*c*) In order to make a report to the officer commanding piquet.

Machine Guns.

The *rôle* of machine guns is ubiquitous; and, like artillery, they should be attached to brigades and to divisions, in order that the commanders may be free to employ them wherever the tactical situation is most likely to be influenced by their fire. Their most useful sphere of action is that of long range infantry fire; they can open a murderous fusilade at ranges, where a very large proportion of infantry fire is pretty certain to be wasted. At the same time the ease with which machine guns can be kept supplied with ammunition makes them formidable at all ranges, especially when cover for them is procurable.

Although when firing at a fixed target, machine guns were less hindered by their own smoke than any

other fire arm, owing to the absence of recoil; still, the removal of this obstruction to aiming from the other arms, is in the case of machine guns compensated for by the fact that, the concealment at long ranges ensured by smokeless powder is most important to the latter. Undoubtedly noiseless and smokeless powder will enable machine guns to engage artillery with less risk of being quickly overwhelmed by its fire, while, on the other hand, it is hard to imagine that artillery, when once it has come into action, can cease fire and shift its position without attracting attention. A sudden pause in the bursting of shells creates the sort of silence that is bound to attract attention, even in the excitement of battle.

Machine guns ought not, however, to be expected to take the place of skirmishers, nor that of artillery.

In Defence.

In conjunction with mounted infantry, machine guns may be pushed forward in front of advanced posts, to compel the enemy to deploy at a distance. In the defence of the main position machine gun fire will supplement that of infantry. They are especially useful for the defence of salients, where it might be undesirable to place artillery.

For the defence of villages, woods, defiles, bridges, and the approaches to any defended position, machine guns have an extended field of action.

They may be echeloned in rear of the flanks of guns in position, sufficiently far back to be out of fire themselves, still near enough to prevent by their fire the guns from being attacked in flank by cavalry.

They may be pushed forward with cavalry, and in conjunction with mounted infantry seize and hold on to positions until infantry can be brought up. While in a

rear guard action, or when covering a withdrawal after a battle they will support cavalry and manœuvre with them, without in any way attempting to assume the *rôle* of horse artillery.

In Attack.

Machine guns may accompany cavalry and manœuvre with them until they actually charge; they can come into action at closer quarters and quicker than horse artillery. In conjunction with mounted infantry they may be pushed forward to drive back the enemy's advanced detachments, advancing to within infantry range of them covered by the fire of their own artillery.

Machine guns, like horse artillery batteries, are particularly suited for supporting any threatened point, or for being pushed forward to take advantage of any favourable opportunity during a battle. Such opportunities will generally present themselves on the flanks.

When the infantry advance to the attack, machine guns may accompany them, and sometimes cover by their fire the actual assault from a flank. The moment a position is captured, they can dash forward to help to hold it, or they can cover a withdrawal; in the latter case they must, if necessary, be sacrificed. In pursuit they will be invaluable for heading the enemy, and rapidly seizing bridges, etc.

Thus we see that machine guns have an important *rôle* to play in every phase of a battle, and may be temporarily attached to each of the three arms, co-operating with each as the general may direct.

Supply of Ammunition to Infantry in the Field.

The supply of ammunition to troops in action is one of the most important considerations in war. At long ranges fire-discipline ought to enable officers to control

its expenditure within certain limits; but when two fighting lines get within short ranges of each other, and the section commanders begin to fall, all control ceases, the fire becomes individual, and the expenditure of ammunition is enormous.

If troops are not allowed to waste their ammunition at the earlier stages of an attack, they ought to have sufficient to carry them on to the position; but the moment they have reached it, or in the event of their having to halt behind cover, or fall back fighting, ammunition must be forthcoming in sufficient quantities to enable them to withstand the determined counter-attacks which may be looked for. The following orders regarding the supply of ammunition to infantry in the field have recently been issued, and too much importance cannot be attached to them.

The amount of 0·303-bore small-arm ammunition taken into the field for infantry is laid down in the Drill Book, but is liable to alteration according to the equipment. It is carried partly by the soldier himself, and the rest is carried for him, and distributed between the regimental ammunition carts and mules which accompany the regiment, the regimental baggage waggons, the divisional ammunition column, and the army corps ammunition column.

Commanding officers of battalions are responsible for the ammunition in regimental charge, and they must take every opportunity to fill up, as required, from the divisional columns.

Officers commanding the royal artillery of divisions and army-corps are responsible to the general officers commanding divisions, etc., for the small-arm ammunition in their ammunition columns. They will fill up from the Ordnance reserves whenever any ammunition has been drawn from their columns by officers commanding battalions, etc.

The position of the divisional and army-corps ammunition columns on the line of march is settled by general officers commanding divisions and army corps. Commanding officers of battalions must be kept informed where they are.

The position of the regimental reserves is settled by generals of brigades. As a rule, two small-arm ammunition carts and the two mules will follow immediately behind each battalion, and the rest of the small-arm ammunition carts will follow the brigade.

Before going into action the officer commanding each battalion will select a mounted officer to have charge of the regimental reserve ammunition, and a warrant officer or staff-sergeant and the pioneers are detailed to assist him. This mounted officer will superintend the issue of ammunition from the regimental reserve to the company carriers, and arrange for its conveyance to those engaged in the fighting line.

The captain of every company on service will detail one non-commissioned officer and two privates to act when required as ammunition carriers (if the company is strong, three privates should be detailed). Only men of proved courage, strength, and activity should be selected for this duty, the importance of which cannot be overrated.

Whenever a general action is anticipated the whole of the ammunition reserves will be closed up as much as possible, and commanding officers will issue to the men the ammunition carried in the regimental baggage waggons.

The regimental arrangement for filling up the men's pouches immediately before and during an action will be as follows:—

When a battalion is about to attack, the officer

commanding will order the issue of extra ammunition. This ammunition will be distributed by the carriers, assisted by pioneers and supernumeraries. After the issue the carriers will join the regimental ammunition reserve. If for any reason the regimental ammunition reserve is not close at hand, the companies of the first line will be furnished with two extra packets per man from the other companies. This will be replaced as soon as possible from the regimental reserve.

The position of the regimental reserves in action will be one small-arm ammunition cart and one mule immediately in rear of each half-battalion, and the other small-arm ammunition carts close at hand in rear of the centre.

During the action, communication will be kept up between the carts and the fighting line, partly by means of the mules, and partly by means of one non-commissioned officer and two privates detailed by the captain of each company to act as carriers. These carriers will bring the ammunition from the mule (or from the cart) in bags, and distribute it to the men in the ranks. The bags, which are specially made for the purpose, form part of the equipment of the ammunition cart.

Immediately these extra issues are made, the regimental reserve will be filled up by drawing from the nearest ammunition column. The mounted officer will use his own discretion as to the time when he should send forward the carriers of the companies engaged with two packets for every man of their companies. The loads are not to exceed 40lbs. to each carrier, and, when advisable, the carriers will be led up to the supporting and fighting lines in action by the warrant officer (or staff-sergeant).

When still more ammunition is required by the

fighting line in action, it will be taken forward under command of the mounted officer, the pioneers, band, or any men at hand from the main body acting as carriers. The officer will leave his horse before he enters the zone of aimed-fire and proceed with the ammunition to its destination. The carriers will move direct to the companies for which they are destined, according to the rules which govern an advance under fire. On arriving at the fighting line they will distribute the ammunition to the supernumerary rank, and remain with their companies, unless otherwise ordered.

Supernumeraries in the fighting line must ensure that not more than a few rounds are taken to the rear by any efficient soldier who may be sent back; and that all ammunition from the killed and wounded is distributed to the fighting and supporting lines.

The system of carrying ammunition by hand herein provided for is not to excuse every endeavour being made to push forward, as far as practicable, the reserve ammunition carts, for if they be skilfully and boldly handled by the officer in charge, they ought, under ordinary circumstances, to get within 1,000 yards of the fighting line in action, and in broken and undulating ground considerably nearer. The immense importance of having a supply of ammunition out of sight of the enemy, and yet within easy distance of the fighting line, will justify great risks being incurred in gaining such a position.

It is the duty of the brigade staff to ensure that the emptied regimental ammunition transport are replaced by others from the reserve massed with the brigade column; but, to save time, all regimental ammunition transpost, when emptied, must at once proceed to the nearest divisional ammunition column

to refill, and then quickly return to its position in rear of the troops engaged.

Officers and buglers should, during the fight, keep themselves supplied with a few packets of ammunition each to distribute when necessary.

Test Questions.

EMPLOYMENT OF INFANTRY.—INFANTRY OF A DIVISION ATTACKING ALONE.

I. Describe the several stages of a fight as regards a battalion in the "first" line of attack.

II. Explain the attack formations you would adopt in the following instances, and give the reasons for your selections :—

(*a*) In European warfare.

(*b*) In savage warfare, where the enemy's numbers are large and his tactics of attack enveloping, as in Zululand.

(*c*) In savage warfare, where the enemy is badly armed but resolute, and where the attack is more or less frontal, as in the Soudan.

III. Show by a diagram the different methods by which the infantry of a division acting alone may be disposed for attack. Explain the comparative advantages of each method, and state under what circumstances one or other would be preferable. (*Vide* "Drill Book," 1888, Part VIII.)

IV. At what ranges, in your opinion, may infantry fire be used in the attack on an entrenched position ?

V. Under what circumstances may long-range fire be adopted, and what precautions are necessary to obtain the greatest effect from it?

VI. What are the advantages of the open order of modern fighting? What precautions are necessary to be observed in its use?

VII. In an attack on an entrenched position, what, in your opinion, is the proportion that the combatants should bear to one another, supposing both forces to be about equal in *morale?*

VIII. What is the difference between extended order for attack and skirmishing?

IX. Describe briefly the principles of Infantry tactics in defence.

X. What stage of the attack is the most critical, and what should be the position of the reserve of the "first line" at this juncture?

XI. The general disposition of troops for the advance to "the attack" is in two lines, with a reserve. With what object is the "second line" formed?

XII. Tell off a battalion of eight companies (100 strong each) as a flank battalion in the first line of defence, assuming it to be on the exposed flank, of a generally straight position.

CHAPTER IX.

Cavalry.*

CAVALRY is dependent on ground for its effective action; still, its superior mobility often enables it to skirt round obstacles which would impede infantry. A general without cavalry is like a blind man without a dog—he can only grapple with immediate danger. Without cavalry an army cannot advance with any degree of confidence; it can rarely retreat unmolested, and cannot be expected to reap the full fruits of a victory. In European warfare, that side which possesses the best cavalry is almost certain to get the start. The first step towards success is early and accurate information regarding the enemy. Having established touch with an enemy, it is possible to delay and hamper his movements, and thus gain time to forestall him. This is the work that cavalry should perform, and how it sets about it has been described in Chapter I. On the field of battle cavalry must co-operate with the other arms in the manner pointed out in Chapters VI. and VII. Let us now consider

The Tactical Use of Cavalry.

In some quarters a reaction has lately set in, and notwithstanding the vast improvements in modern firearms, and the absence of smoke to impede the view of infantry when firing volleys, it is urged that the increased rapidity with which cavalry manœuvres are now executed ought to enable this arm to play a more important *rôle* against infantry. The argument appears to be based on the nature of the man and not on his weapon, on the assumption that, in these days of

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* "Cavalry in Modern War," *vide* Appendix IV.

extended formations, the self-reliance of infantry will be shaken in the presence of cavalry galloping down upon them at full speed. There is nothing new in this theory, which was always applied to skirmishers; but between skirmishers and the *first line* of an infantry attack formation there is this radical difference: the latter has a defined front, and ample provision is made for its rapid reinforcement.

Cavalry must not stop to question too closely whether the enemy are sufficiently shaken; but to what extent troops may be deemed to be demoralised without showing it in some marked manner is a delicate point for a leader to decide before hurling his squadrons against properly armed infantry. Against shaken troops the opportunities will possibly be as great and as decisive in the future as in the past.

The Prussian cavalry, as a last resource, charging unbroken and advancing French infantry at Mars-la-Tour, lost half a brigade and partly succeeded in gaining their object. The vicissitudes of a battle may frequently demand a similar sacrifice to disengage or supplement the other arms; but, as a general rule, the cavalry ought only to charge infantry when surprised, when in retreat and short of ammunition, or when greatly disorganised; under other circumstances cavalry must be prepared to fight on foot, in order to obtain a chance of success against infantry. This is surely what Napoleon meant in 1811, when he wrote to the French Minister of War, "The cavalry regiments of the '*ancien régime*' carried small arms which they used not as carbines, but as muskets. I desire you, therefore, to form a council of cavalry officers to come to some decision in this matter. I cannot accustom myself to see 3,000 *élite* cavalry (cuirassiers) at the mercy, in the event of a surprise, of a few light troops, or liable to be checked on

the march by a handful of bad shots posted behind trees or houses."

Modern fire-arms have caused a less frequent use of cavalry in the actual shock of battle; still, its presence on the field will always have the effect of obliging hostile infantry to keep closer together than they otherwise would, and will thereby give opportunities to its own artillery and infantry. This is the mission of cavalry, to aid the other arms.

When hovering about the immediate vicinity of a battlefield, acting against lines of communication and supply, cutting telegraphs, destroying railroads, bridges, etc., watching from a flank the movements and dispositions of an enemy, and reporting the effect produced by artillery fire, cavalry is playing a distinctive but important *rôle*, while for reconnoitring purposes, in pursuit, and during a retreat, cavalry is absolutely essential.

The action of cavalry is purely offensive. The blunder made by the Russians at Balaklava will never be repeated. When called upon to charge, no matter what the objective may be—cavalry, guns, or infantry—the charging squadrons should go at their opponents "hammer and tongs," so regulating their pace as to deliver their onslaught at the highest rate of speed compatible with cohesion. This cohesion need not in any way interfere with the independence of squadrons, which is necessary to enable cavalry to be rallied, as well as to manœuvre over rough ground against their opponents' flanks while protecting their own.

"La force de la cavalerie est dans son impulsion; mais ce n'est pas seulement la vélocite qui assures son succés; c'est l'ordre, l'ensemble, et le bon emploi de ses réserves." These are Napoleon's words, to which Jomini adds, "If an army be deficient in cavalry, it rarely obtains a signal success, and experiences great difficulties in its retreat."

No precise formation for attack can ever be laid down for cavalry; so much depends upon the ground and on the character of the enemy and his dispositions. (Plate X., however, gives an abstract formation for a brigade of cavalry attacking.) The ground over which a charge is to be made should be reconnoitred, and for this purpose cavalry moving over unknown ground is always preceded by *ground scouts;* its front and flanks are secured by reconnoitring groups.

Cavalry usually charges in line of squadron columns with supports and a reserve. Thus, a single brigade would usually have one regiment in the front line, one regiment in support, and one regiment in reserve. (*Vide* Plate X.) The supporting squadrons should lie from 50 to 100 yards from the exposed flanks of the first line, and about 200 yards in rear of it. No charge should ever be delivered without a reserve, varying in strength from one-fourth to one-third of the charging squadrons, which include the first line and the supports. The reserve is placed about 400 yards behind the first line, usually on the protected flank.

Every charge of cavalry *versus* cavalry consists of a series of operations directed against each other's flanks, and resolves itself into a *melée*, in which both sides become mixed up. When at its height the skilful introduction into the combat of a fresh body of troops on one side or the other will quickly decide the issue; hence the absolute necessity for a reserve to meet fresh attacks. Reserves are also useful to confirm and follow up success, or in the event of a sudden overthrow, to protect the retreat of beaten squadrons and endeavour to achieve success after their withdrawal, a feat sometimes rendered possible by the disorganisation of the victors. The commander of the reserve should not throw his whole

force *en masse* into the *melée*, unless absolutely certain that the enemy has charged with his last squadron.

Rules for the Employment of Cavalry.

I. Never await an attack; either advance to meet it or retire.

II. Attack infantry only when it is demoralized, surprised, or out of ammunition, unless a necessary sacrifice has to be made.

III. Never charge without supports and a reserve.

IV. Don't throw the whole reserve into the fight; always endeavour to keep a portion in hand.

V. In order to take advantage of cover and ground, manœuvre in column.

VI. In attacking guns attack also their cavalry escort simultaneously. Charge the former in open order, and the latter in line, and endeavour to attack both in flank or rear.

VII. To charge, increase the pace gradually from a brisk trot till full gallop is attained about 50 yards from the enemy, and so regulate the pace as not to sacrifice cohesion.

VIII. Remember that just after a successful charge, squadrons issuing from a *melée* are very liable to be worsted by a body of fresh troops in compact order launched against them.

IX. If cavalry is called upon to charge undemoralized infantry, the nature of the ground must determine the formation to be employed. All attacks should either be convergent or in echelon. Extended order may be used against skirmishers. If a choice is offered, the right flank of infantry should be selected for attack; because the fire of a body of infantry is always greater towards its left

flank than towards its right. Infantry are apt to fire high, and therefore advancing up a slight incline against them is rather an advantage. Small bodies of cavalry may sometimes deliver local counter attacks against the flanks of the assailants' infantry during the last phases of the assault in a position, when they are heavily engaged with infantry in front.

X. Always remember that the flanks of cavalry are particularly vulnerable; and seek those of the enemy, while protecting your own. This is best done by having squadrons in support on the exposed flank or flanks.

XI. There are five conditions essential to a well-executed charge:—

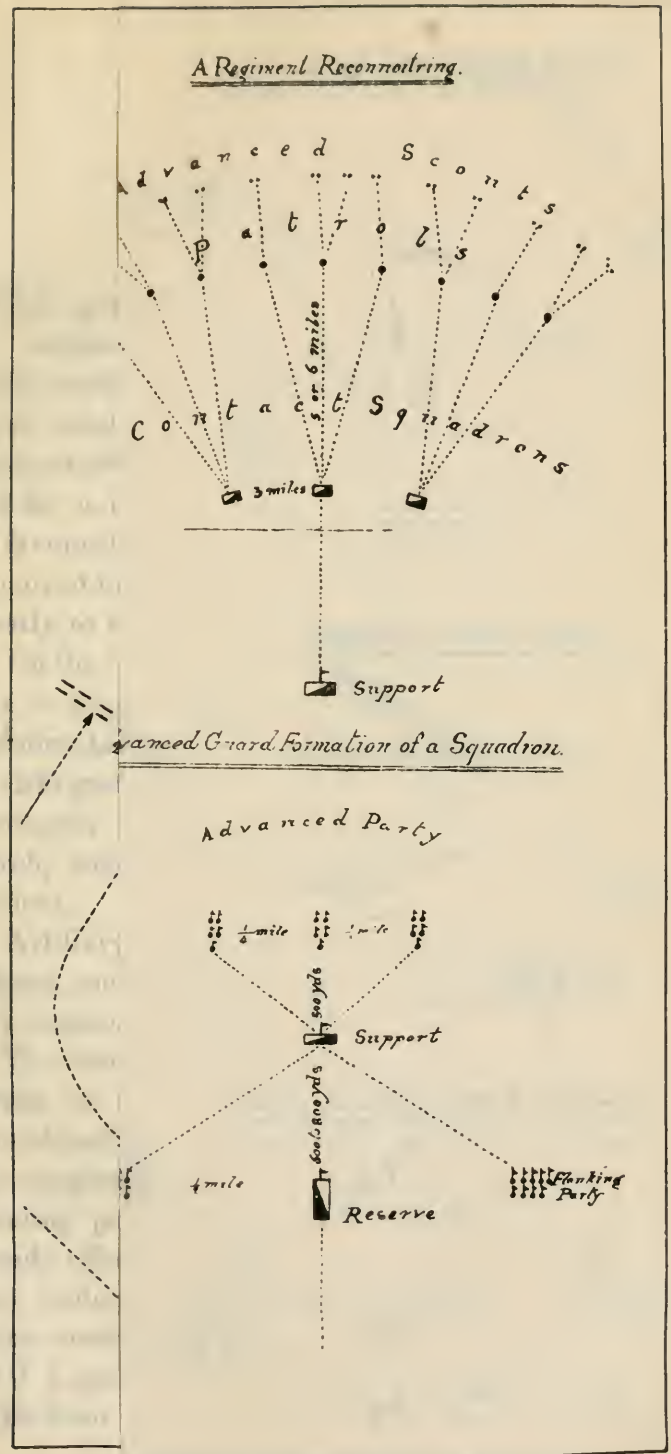
1. Open ground free from obstacles.
2. Opportunity.
3. Speed.
4. Cohesion.
5. A reserve.

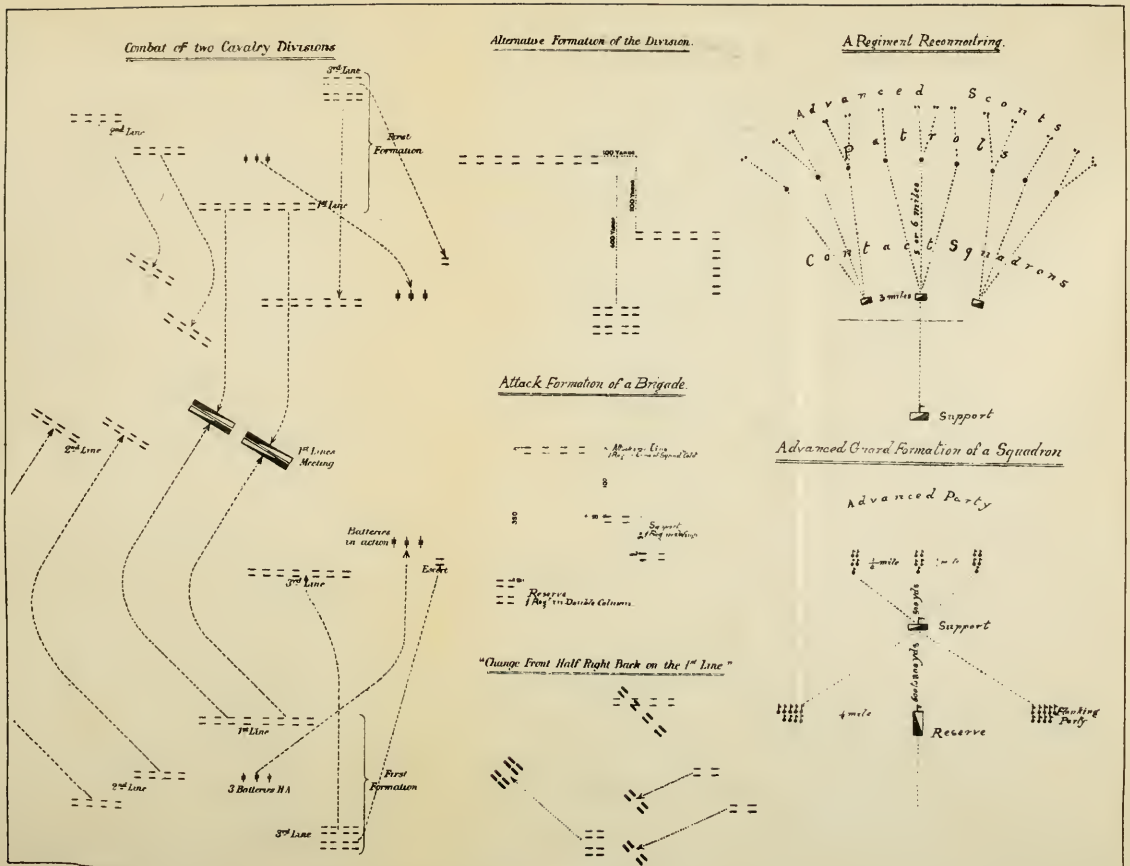
XII. No manœuvre of large bodies of cavalry should take place within 500 yards of the enemy. To every cavalry brigade a battery of "horse artillery" is attached. Cavalry combined with horse artillery, if skilfully manœuvred, will still play an important part in action. When acting against cavalry, the fire of the guns should be directed on those of the enemy until his cavalry moves forward, then on his first, second, and third lines successively until each becomes in turn masked by their own squadrons advancing. Horse artillery must gallop forward and gain a position on a flank before a charge is delivered.

Cavalry seldom venture to attack well-placed and well-served guns.

Test Questions.

1. Two squadrons of cavalry are ordered to attack a battery of artillery which has a cavalry escort. How should the commander of the squadrons make his attack?
2. Why should cavalry never attack without a reserve?
3. What are the weakest points in cavalry formations, and how should they be defended? Illustrate your answer by showing how you would form a regiment of cavalry of four squadrons preparatory to charging a cavalry force of about the same strength.
4. Show by a diagram the attack formation of a cavalry brigade of 12 squadrons; state distances of supports and reserves from first line.
5. Six squadrons of cavalry have crept up unperceived behind a copse to within three-quarters of a mile of a force consisting of 2 batteries of artillery, in the act of limbering up, 2 companies of infantry on the right of the guns and about 400 yards in advance of them, and 1 squadron of cavalry about 100 yards in rear of the left flank of the guns. Illustrate by a diagram the attack formation of the six squadrons, and state your opinion regarding the probable issue of the fight, and the *rôle* likely to be played by each arm engaged.
6. Show by a diagram the attack formation of a regiment of cavalry attacking infantry.
7. Why should cavalry manœuvre in column and attack in line?


A Regiment Reconnoitring.
Advanced Patrols
Scouts
Contact Squadrons
5 or 6 miles
3 miles
Support
Advanced Guard Formation of a Squadron.
Advanced Party
½ mile
½ mile
Support
Squadron
Squadron
½ mile
Reserve
Flanking Party



CAVALRY FORMATIONS.

CHAPTER X.

Artillery.

THE special characteristic of artillery is its range, which now extends under favourable conditions to 5,400 yards, although, according to Prince Kraft, no great results are to be expected until shrapnel fire becomes effective (3,000 yards). The shattering effect and the noise of bursting shells is demoralising, while on favourable ground the rapidity with which guns can be moved forward to secure important points contributes greatly to the value attached to their co-operation.

On the other hand, the disadvantages of artillery are that it requires command, range, fine weather, and a considerable amount of tolerably good ground to work on (100 guns massed in action require about a mile of frontage); it occupies a great deal of road on the march, and is costly and difficult to train and keep efficient.

Artillery commences an action both in attack and defence, and if skilfully handled over suitable country, very commonly finishes it.

To what extent guns should be moved forward during an action must depend on the nature of the ground and on the requirements of the infantry which it is supporting. It is wrong for guns to leave a commanding position merely for the sake of reducing an already effective range. For guns to advance over the open under infantry "medium range" fire, except under cover of their own infantry, is to court disaster; but if a general believes that the presence of his guns in the front line will help to re-establish confidence or

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confirm a temporary success, he is justified in advancing a portion of his artillery alongside of his infantry, even to within 800 yards of the enemy's rifles. When guns are thus committed to an action at close quarters, all idea of withdrawing them must be abandoned; they must either go forward, or be captured if deserted by the infantry alongside of whom they have unlimbered.

So long as guns in action have got their own infantry in front of them, they ought never to be retired unless a general retreat is ordered, and even then, a portion of the guns may be worked to the last, and thus form a barrier, behind which the infantry can rally if hard pressed.

There is a considerable difference of opinion about the effect procurable from long range artillery fire, and so many improvements are being made in the construction and sighting of field guns that results far exceeding any yet realised are confidently predicted; but, as stated in a previous chapter, the efficiency of artillery depends to such a large extent on finding the range, and on accurate shooting, and this, again, on the nature of the ground and the state of the weather, that any calculations not made on the spot are worthless, while those based on the Franco-German war ought, perhaps, to be regarded as abnormal in the face of the experience gained in a more recent European campaign, when the combatants were more equally matched.

That guns have always played, and probably will continue to play, an important *rôle* on every battlefield, is acknowledged on all sides; on their skilful co-operation with the other arms, indeed, the issue of a battle is considered largely to depend.

What effect noiseless and smokeless explosives may produce on field artillery has yet to be seen. It is the

arm which will gain most by their introduction, especially in defence.

In 1877, however, against Turkish earthworks, the Russian guns did not do much execution, and the report of General Todleben (one of the greatest engineers of the century) was decidedly discouraging. It is true that the Russian artillery was inferior, but the Turkish guns were of the latest pattern, and were served under favourable conditions, and yet the results obtained from them compared unfavourably with those obtained from long range rifle fire.

Horse Artillery.

The combined action of horse artillery and cavalry is very effective, and guns should almost invariably co-operate with cavalry. As a general rule, the guns precede the charging squadrons, and rapidly take up an advanced position on the protected flank, whence they can aid by their fire their own squadrons, advancing obliquely almost up to the moment of collision with the enemy. These are bold tactics, but they are founded on the sound principle that as the flanks of cavalry are most vulnerable, the best plan of action is to threaten those of the enemy, while at the same time you protect your own.

This is co-operation exemplified, each arm guarding the other, while the efforts of both are combined against the common foe.

The "Field Artillery Drill" says:

"The artillery should not approach so near the enemy that it is in danger of attack before it can be supported by its own cavalry.

"At the commencement of the action the artillery should cover with its fire the deployment of its cavalry,

and draw upon itself the fire of the enemy's guns. When the position of the enemy's cavalry has become known, the guns will be directed exclusively upon it. When it is no longer possible to fire upon the enemy's cavalry, the artillery will direct its fire on the hostile artillery. Should no target remain to it, it will continue halted in position, awaiting the result of the combat.

"If the charge is successful the artillery will advance and take up a position to enable it, by its fire, to prevent the enemy from rallying. If the charge fails it will be the duty of the artillery to delay the pursuit of the enemy, and enable the retiring troops to rally on a given point.

"The officer commanding the artillery should ascertain from the general, during the earlier part of the action, on what point he proposes to rally his cavalry if driven back, and also whether he wishes the artillery to cover that rally by holding its ground or by falling back into some position, previously selected, further to the rear."

In either case, as laid down in the "Field Artillery Drill," two points are of paramount importance:

(i.) The cavalry must rally in rear of a flank of a battery, and not on the battery itself.

(ii.) The officer commanding the artillery must come to an instantaneous decision as to his action; he must fight to the last or retire at once.

Horse artillery batteries are peculiarly suited for quickly supporting any threatened point, or for taking advantage of a favourable phase in an action; and should always co-operate with cavalry when making a reconnaissance in force, when covering a retreat, or when pursuing a beaten enemy.

Guns massed in action require no special escort, as they are presumably acting in concert with the other arms; but when guns are detached and sent forward, or to a flank, they may be escorted by cavalry to protect them until the nearest infantry comes up. Cavalry escorts should move on the exposed flank, and when the guns unlimber, should take up a position rather with a view to observation in front and on the flanks than to protect the guns from being charged, as guns when in action can generally protect themselves. If a closed party of the cavalry escort be reserved, it should be posted in the rear of the exposed flank of the artillery.

Infantry escorts should always accompany guns when there is any possibility of the enemy's sharpshooters creeping forward to within effective range of them. The infantry should form a line of skirmishers, about 500 yards ahead of the guns, on the exposed flank, with supports about 300 yards behind them and the main body alongside of the guns. If mounted infantry form the escort, their horses would be with the artillery teams.

Although artillery fire-tactics in defence and in attack have already been discussed in Chapters VI. and VII., it seems desirable to summarise the principles which govern it, as laid down by the German and English regulations:

The officer commanding the artillery of a force must always take his orders from the commander of the force to which he is attached.

When selecting a position considerations respecting the effect of fire are more important than those affecting cover. The first necessity is an extensive field of fire, together with sufficient space.

Screens are only advantageous when they are from 100 to 200 yards in front of a battery.

If possible, batteries should form line beyond the reach of the enemy's fire or behind cover.

Special importance is attached to the simultaneous and sudden opening of a well-directed fire from guns which have been previously massed.

A preparatory position may sometimes first be taken up, and when this is done all preparations for action will be made in the preparatory position.

When the position is on a height the crest should not be approached before opening fire.

Batteries which come late into action should avoid, as far as possible, aligning themselves on guns or on troops, the range of which has already been obtained by the enemy. When the ground permits of their being echeloned this danger can be best avoided.

Regardless of losses the fire of batteries should be directed against that portion of the enemy's position or troops which happens, at the moment, to be of the greatest tactical importance, and the suppression of which is most likely to help their own side.

Fire should first be directed on the enemy's artillery.

When firing on infantry, unless they happen to be in columns, the enemy's firing line should be shelled.

Cavalry, unless massed, or when charging, seldom offer an adequate target.

Concentration of fire against a part of the enemy, even when there is no superiority in strength, may often produce a crushing effect.

Guns should not change their target, if they can help it, until the desired effect has been obtained on the target on which they are firing.

No change of position should take place without the sanction of the officer commanding the body of troops to which the artillery is attached.

In the case of an encounter which develops from

the column of march, the advance guard should secure time and space for the deployment of the main body. This task falls in an especial degree to the field artillery. The better this arm succeeds in carrying on the action at first without the aid of any considerable force of infantry, the better will it secure freedom of decision to the commander of the troops. The expenditure of ammunition and the rapidity of fire are at all times governed by the object of the action and the importance of the target. The selection of the projectile is the business of the battery commander.

Every battery must, under all circumstances, bring the whole of its guns into the fire position. Movements in retreat are to be begun at a walk.

Mountain Artillery.

In mountain warfare guns are always liable to surprise; they should always be escorted by infantry.

Ammunition has all to be carried on pack animals, and must be strictly economised.

When changing positions for short distances it is often quicker to move the guns by hand than to pack them on the mules.

Owing to the time it takes to pack them, mountain guns cannot remain in action as long as field guns.

Small guns capable of being carried on mules are not intended to batter down strong places, although against troops they are very destructive.

With regard to the attack and defence of heights and defiles, the principles which govern the tactical use of field artillery are generally applicable to mountain guns; but it requires practice and experience to handle the latter skilfully in hill warfare; and it is a most important branch of the profession, especially in our service, where troops are so frequently called upon to fight in roadless and mountainous countries.

CHAPTER XI.

Rear-Guards.

THE ordinary rear-guard to a column advancing consists of a portion of infantry, with a detachment of cavalry or mounted police, which brings up the rear of every column of troops on the march. It is necessary for the protection of stragglers and authorised camp-followers, and to afford assistance to trains and baggage-guards in case of breakdowns.

The duties of rear-guards of this description are often very trying, and tax the patience and good temper of those employed, especially in bad weather, with bad roads and inferior transport.

There are two other classes of rear-guards: 1st, to a force retiring for strategical or other reasons, without having given battle; 2nd, to a force retreating after a defeat.

It is with the rear-guard of a force retreating after a defeat—the rear-guard *par excellence*—that tactics has to deal; but the principles on which that is formed and handled for protection of the main body may be applied at discretion by commanders of rear-guards of all descriptions.

At first sight it may appear strange that a rear-guard composed of a portion of a beaten force should be called upon to do what the whole detachment or army has failed to accomplish, viz., stop a hitherto victorious enemy. Experience, however, has shown it not only to be possible, but so generally feasible, that, unless an army remains fighting long enough to be routed

before it leaves the field of battle, it is an accepted maxim that a rear-guard of some sort ought to be extemporised, under cover of which, and of darkness, the greater portion of the beaten troops can get off the field and reorganise.

During the first moments of his final withdrawal from a field of battle, a commander looks to his cavalry and artillery to cover the retreat of his most severely handled battalions, while he organises a rear-guard composed of his least demoralised troops, usually taken from the general reserve.

A rear-guard action calls forth the highest qualities of a tactician under the most difficult and adverse circumstances, and at no time is the discipline of all arms more surely tested than when called upon to co-operate in covering the retreat of a beaten force.

It may here be remarded that, although the words "army" and "general" are most frequently employed throughout these chapters, on active service a knowledge of the principles of tactics is as essential to the commander of a battalion or a company as it is to a general commanding a division or an army.

It was during the conduct of a rear-guard in retreat that the Duke of Wellington, then commanding the 33rd Regiment, first distinguished himself in the Low Countries. On the 15th of September, 1794, "the French held the village of Baxtel, from which the Duke of York directed General Abercrombie, with two battalions of the Guards, four of the line, a battery of horse artillery, and a couple of squadrons of horse, to dislodge them. The English, though they attacked with gallantry, sustained a repulse, and, being closely pursued, would have been probably cut to pieces had not Colonel Wellesley, with exceeding promptness, deployed his battalion and checked the pursuers. The

village was not retaken; but his judicious move arrested the enemy, and the English were enabled to continue their retreat in good order and without heavy loss."*

It was a saying of Napoleon's, that "No man was a general until he had conducted a retreat."

One of the most gallant rear-guard actions in the annals of the British army was "El Bodon." On September 25th, 1811, a force composed of three battalions, the 5th, 77th (British), and 21st (Portuguese), five squadrons—two of the 11th Hussars and three of German Hussars—and two batteries of artillery, retreated for several miles in contact with a force nearly five times their strength, and covered the withdrawal from a difficult situation of three battalions, under Picton, operating on their right flank.

This action elicited the warm approval of the Duke of Wellington, expressed in terms extremely flattering to the regiments engaged, and the student is recommended to peruse the full account of it which is given in Napier's "Peninsular War," and quoted in Clery's "Minor Tactics."

The tactics adopted by the French General, Montbrun, would not be applicable to the present day, when a force of even 2,000 cavalry could not hope to attack successfully in the open three battalions of infantry armed with breech-loaders. Modern infantry armed with breech-loading (and magazine rifles, as they soon will be) can develope more than thirty times the amount of fire action that was possible in those days, and the assailants might now be exposed to it for a distance of a mile and a quarter, in place of 500 yards as in 1811. This fact has altered the relative strength of the two arms, when directly opposed to each other, to such an extent that even on open ground infantry may now confidently receive cavalry without forming squares.

* Greig's "Life of the Duke of Wellington."

Rear-guard *fights*, in which cavalry formerly took such a prominent part, belong rather to history than to the study of modern tactics.

The Composition of Rear-Guards

must depend entirely on the nature of the country, but a rear-guard is usually composed of a force of all three arms, particularly cavalry and mounted infantry, with a portion of engineers. The cavalry and artillery will be used to check and delay the enemy by forcing his columns to deploy. Mounted troops can retire quickly after delaying an enemy. Infantry is also necessary to defend bridges and defiles and to make a determined stand when required. Machine guns will be useful. The freshest and best troops should invariably be selected.

Order of March.

The whole of the mounted troops, with machine guns, should cover the rear, artillery next, and lastly the infantry nearest the main body.

Strength

according to circumstances, from $\frac{1}{5}$ to $\frac{1}{3}$ of the force from which it is detached.

Rear-Guard Tactics

are essentially defensive; all the principles of modern defence are applicable to them, especially the use of hastily-constructed field-works. The mission of a rear-guard, like that of out-posts, is to retard rather than repel an enemy, to gain time rather than inflict loss. Any success can only be temporary, as the enemy's advanced-guard will shortly be reinforced by his main

The art of rear-guard fighting is—

1st. To occupy successive positions which directly cover the retreat of the columns in rear, and by taking every advantage of the natural strength of such positions, to oblige an enemy to reconnoitre, deploy, and to approach them with caution, in a word, to *delay him.*

2nd. To know when and how to withdraw without appearing to be hard pressed.

If the enemy's cavalry presses forward, a rear-guard commander should withdraw his squadrons to the flanks and, carefully masking his guns, endeavour to draw it on to his infantry, deployed and ready to receive it with volleys.

If the enemy's cavalry is beaten off, a rear-guard commander should not let his squadrons pursue, but rather open fire with his guns, bearing in mind that his cavalry has other far more important duties to perform than that of cutting up a few of the enemy's troopers.

The duty of the cavalry is to reconnoitre widely and discover any indications of the pursuers creeping up by parallel roads to cut off the rear-guard.

A rear-guard commander may sometimes engage the enemy's artillery, but directly his infantry appears, he must open fire on it at the longest effective ranges and compel it to deploy, and so gain time. A rear-guard commander may post all his troops in the first line, and thus occupy a much more extended front than in the ordinary defence of a position, because his mission specially calls for the display of shifty tactics, and any trick which seems likely to deceive the pursuer as to the strength and intentions of the rear-guard is allowable in its commander. As Lord Wolseley has said, the *game of brag* must continually be played by a rear-guard commander

Special circumstances may demand a prolonged resistance, such as the defence of the approaches to a mountain defile, a bridge, or a deep ford which the retreating army, hampered with its sick and wounded, and possibly delayed for want of sufficient transport, has not succeeded in passing.

On such occasions rear-guard tactics scarcely differ from those of ordinary defence, and under certain conditions a rear-guard may be directed to hold out to the last extremity, even until it is forced to surrender.

A rear-guard defending the entrance to a defile will occupy a position as far in rear of the main body as the configuration of the country, the condition of the roads, and the strength and proximity of the pursuers may justify.

At the entrance to the defile, if its flanks are accessible, the main column will have left a sufficient force of infantry and artillery to hold the flanks and command the approach, and so protect the retreat of the rear-guard and prevent the enemy from entering the defile with it. This affords a favourable opportunity to relieve the old rear-guard and allow it to rejoin the main column.

If the flanks of a defile are inaccessible, as in the case of very steep heights, the main body will not only leave a detachment in front of the entrance to cover the retreat of the rear-guard, but will also construct successive barriers half way across the defile itself, to aid the rear-guard in retarding the pursuers. In this case, however, the chief defence will be *in rear of the defile*, and will be directed with a view to crush the head of the enemy's column as it issues from it.

Care must be taken to withdraw the rear-guard quickly through a mountain defile, or over a bridge or

causeway, as the enemy is sure to press on briskly in the hope of issuing pell-mell with the defenders, and so nullifying the defence in its rear.

A bridge should be blown up—a ford should be rendered impassable after crossing.

A causeway (a road over a morass) like a defile, with heights inaccessible, should be defended in rear on the side furthest from the enemy.

The withdrawal of troops left in front of any sort of defile is always a difficult and dangerous operation. The best plan, perhaps, is to dig across the entrance to a defile through which a force is withdrawing a deep and wide ditch, provided with a temporary bridge which, of course, must be destroyed as soon as the last of the rear-guard troops have passed over.

If the pursuit is slackening, a rear-guard commander should report the circumstance to the O. C. main body, but still keep touch with the enemy. If the pursuit stops altogether, touch must still be maintained, and, if necessary, a detachment left to watch the enemy's movements.

A rear-guard retiring over the open should be withdrawn gradually. 1st. The infantry. 2nd. A portion of the guns 3rd. The remainder of the artillery. 4th. The cavalry withdrawing slowly on the flanks.

The particular line of tactics adopted by a rear-guard must depend on the special circumstances in which it is placed. If its own main body is close at hand, and much hampered with its trains, &c., more time must be allowed it to get away, and, as under these circumstances the pursuit is likely to be vigorous, a series of desperate and prolonged rear-guard actions may be imperative.

If the country generally is favourable for defensive tactics, no good opportunity should be lost of checking

the pursuit; but a rear-guard action should never be unnecessarily prolonged.

The strength of a rear-guard can only be decided on the spot, but a large proportion of cavalry and artillery should be detailed for this duty (unless the country is unsuited for their effective action)—the cavalry to check that of the pursuit, and to reconnoitre widely to the flanks, &c., and the guns to compel the pursuers to deploy at a distance.

Plate XI. illustrates an imaginary rear-guard action.

READING OF THE MAP.

The River Don is unfordable below its junction with the River Dee; above this point it is fordable with difficulty. The River Dee is fordable. The country east of the Don and south of the Dee is hilly and cultivated; the nearest road, leading south, is three miles off the map—scale, 1½ inches to the mile. Contours 80 feet.

Disposition.

A force consisting of seven battalions, three batteries, one regiment of cavalry and some engineers forming the rear-guard of a beaten army in retreat, has had severe fighting, and withdrawn over the River Don, destroying the bridges at Wear and Hoe.

The force is hampered with 500 wounded, and is badly off for transport.

At 6.45 a.m. it is reported to the general commanding that the bridge over the Don, at Stobridge, is broken, and the engineers (short of material and tools) require three hours to repair it.

At 7 a.m. the enemy's cavalry and horse artillery appear on the roads leading to Wear Bridge and Hoe Bridge, and at 7.45 a.m. his infantry and artillery are observed moving in a south-easterly direction towards Claton. It is evident that, having discovered the bridges

of Wear and Hoe are blown up, he intends crossing the River Dee near Claton.

The general commanding the rear-guard makes the following dispositions :—Field hospital, ambulance, 1½ batteries with their waggons, ammunition carts, and Nos. 5 and 6 battalions (which have suffered most severely in the previous day's fighting) to push on, and mass near the bridge over the Don north-west of Stobridge. No. 7 battalion is sent forward to assist in repairing the bridge, and to occupy the south bank of the river in front of Stobridge after placing the village into a hasty state of defence.

Cavalry.

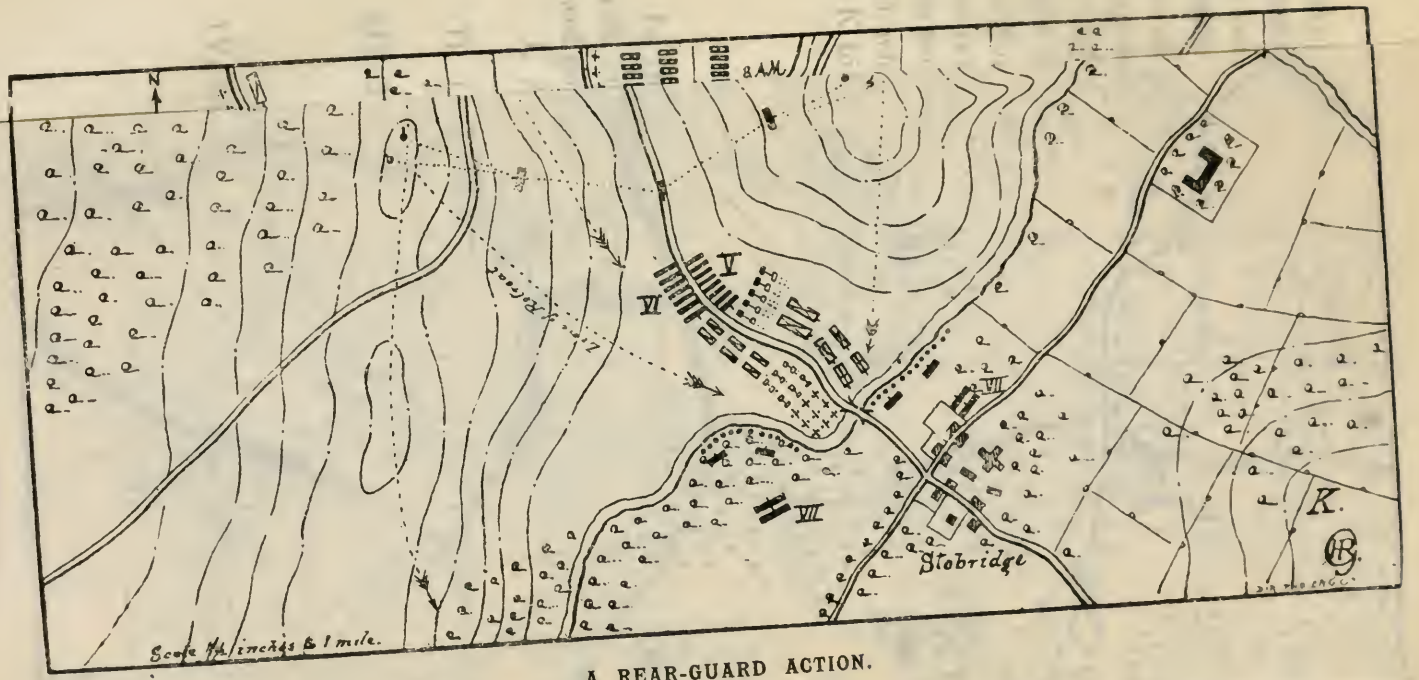
One squadron in observation on left flank at Wear; 1 troop as escort to the half-battery on A hill; 1½ squadrons behind hill F, south-east of Claton; 1 troop to watch River Dee, east of Claton; half-troop to destroy Reay Bridge, and watch road east of Reay Farm; half-troop to watch Stobridge—Sale Road.

Artillery.

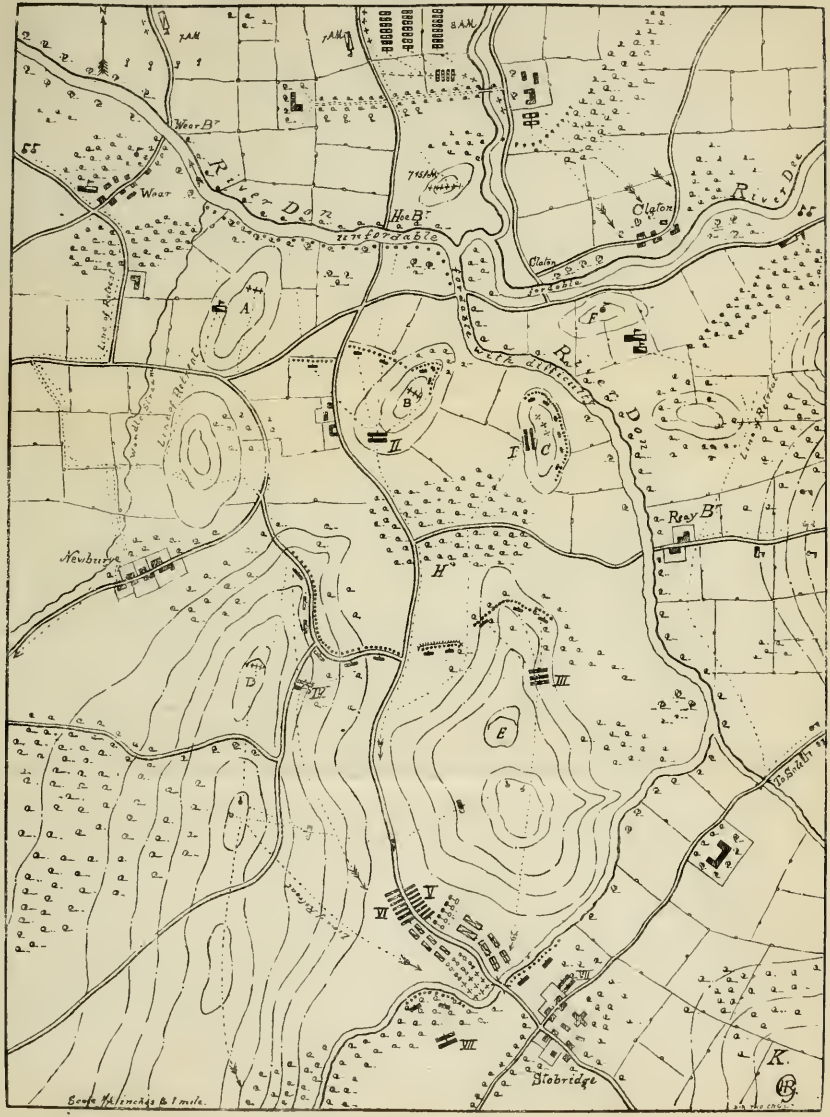
Half-battery on A hill, with orders, if molested by enemy's sharpshooters, to retire to D hill (where an epaulement is thrown up). This half-battery is instructed to withdraw in any case as soon as the enemy has crossed the Dee and is out of range. Half-battery on B hill; half-battery on C hill, facing north or east, according to enemy's dispositions. An epaulement is made on E hill for these two half-batteries to withdraw to, half a battery at a time.

Infantry.

No. 1 battalion, C hill, entrenched; No. 2 battalion, B hill, entrenched with two companies, skirmishing along south bank of Don, to protect guns on A hill from



A REAR-GUARD ACTION.



A REAR-GUARD ACTION.

enemy's sharpshooters if they creep forward; No. 3 battalion, north slopes of E range of heights entrenched, two companies entrenched in rear of wood H; No. 4 battalion, lining east side of road leading over north-east slopes of D range of heights. The assumption being that Nos. 1 and 2 battalions will delay the enemy for two hours, or as long as possible, and then fall back under cover of the guns withdrawn to E and D positions, and No. 3 and 4 battalions posted as above stated. The final retirement will be over the heights marked D and E to Stobridge, under cover of the other battery and a half, which, when they get over the river, will be posted on K hill, east of Stobridge.

Rear-Guard Positions.

In the above sketch, the following considerations, which ought mainly to govern the selection of rear-guard positions, have been kept in view :—

I. A rear-guard position should cover the line of retreat.

II. It should be one from which fire can be opened upon the enemy at long range.

III. The means of retiring from it should be sufficient. Two or more lines of retreat are desirable, especially when a strong force of artillery is allotted to a rear guard.

IV. Successive positions to fall back upon should be chosen with a view to covering by the fire of artillery, the retreat of the other troops.

PLATE XI

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CHAPTER XII.

Marches.

MARCHES may be conveniently divided under the following seven headings:—

1. Timed Marches.
2. Marching and Fighting Endurance of Troops.
3. The Order of March.
4. Rules as to Halts.
5. The Use of several Parallel Roads.
6. Night Marches.
7. Flank Marches.

Timed Marches.

The object of "Timed" Marches is to get troops to the right place, at the right time, in good condition. To ensure this the roads must be examined and the country reconnoitred; for calculations of time depending on fixed rules are misleading. The effect on a country generally, and especially on roads, rivers, streams, and mountain paths of severe storms, heavy rain, continued drought, frost, or snow, must always be taken into consideration; but, above all, the probabilities of obstruction and resistance likely to be met with must be carefully weighed, and an ample margin provided for.

In 1877 the principal roads in Bulgaria were in good condition at the beginning of the campaign, but later on they were much cut up by the passage of heavy artillery and transport trains. The country roads connecting villages were passable during the summer, but when the autumn rains came on in September, they soon became quite impassable.

General Gourko, in his famous reconnaissance, July 12th to 19th, 1877, notwithstanding his carefully-planned and skilfully-executed march over the Balkans, underrated the resistance he was likely to meet with from the Turks on the southern side, and arrived too late by one day for the attack on the Shipka Pass, in which he had planned to take a part on the 17th July, in conjunction with a force attacking from the north side. This is the most recent example of over-confidence, and it resulted in two completely isolated and unsuccessful attempts to capture the pass within thirty-six hours. Although Gourko was able to push forward with his cavalry, his infantry was worn out and completely exhausted, and indeed, it seems difficult to understand how any other state of things could have been anticipated.

General Gourko took with him only pack-animals, carrying five days' rations, and three days' forage, but managed to live almost entirely on the country as soon as he got over the mountains.

The first day's march was 18 miles, the next day Gourko marched 27 miles, and after a march of 9 miles he secured the southern outlet of the Hainkioi Pass by 10 o'clock a.m., surprising and overpowering the Turkish garrison. When the difficulties of the road are considered, this was one of the most daring and surprisingly rapid marches on record. Where Gourko crossed, the summit of the Balkans is 3,700 feet, of which 1,900 feet has to be ascended in the last eight miles, while on the southern slope the path descended in twelve miles 2,300 feet, over the greater part of which twenty miles the guns had to be dragged by the infantry. Two guns with their teams rolled down the ravine. The path, which was nothing but a mountain trail, was opened out in two days sufficiently to let the guns pass, by a

squadron of mounted pioneers (Cossacks), superintended by Major-General Rauch, an engineer officer.

In the Kyber Pass, 1878-79, the transport consisted chiefly of camels, ponies, and mules, supplemented, as the road was opened out, by bullock-carts and a few elephants. The difficulties of making a road in places were very great, and necessitated a large amount of blasting. During the return march after the first campaign, the thermometer frequently registered 120 degrees at eight o'clock in the evening. The mortality amongst the transport animals was appalling, and in the vicinity of the camps there was a veritable Golgotha, the stench from which was awful, and produced cholera and other malignant diseases, which the troops carried with them on their homeward march. In places the pass was knee-deep in dust, and covered with large loose stones worked up by the constant traffic, while for weeks dust storms prevailed, without much intermission, day and night.

The removal of the dead camels, even a few hundred yards outside the camps, was a work of incessant labour and toil. But in spite of these difficulties, from twelve to fourteen miles a day was performed. The convoys were continually harassed, though never seriously delayed by the hostile tribesmen along the route.

"Plevna fell on the 10th of December, 1877, and the Russian reinforcements for General Gourko commenced their march to Orkhanie, a distance of 75 miles, on the 14th, and arrived there between the 20th and 23rd of December.

"From the 18th to the 22nd snow fell, with little intermission, and on the night of the 19th-20th the temperature fell to 3° Fahr. The roads then became an alternation of smooth ice and frozen masses of mud ten inches in diameter, and hard enough to resist even

artillery wheels. None of the horses were rough shod, the little Steppe horses of the intendance waggons were not shod at all. The result was that at every hill the waggons had to be hauled and pushed up by hand."

In 1880 General Roberts marched from Kabul to Kandahar (321 miles) in 23 days, averaging 14 miles a day; his force was composed of 7,500 infantry, 1,600 cavalry, 18 mountain guns (7 pdrs.) Everything was carried on pack-animals, including the guns. He had with him about 8,000 camp-followers, making a total of about 18,000 men and 9,000 animals. There was no opposition, and the crops were standing. The road had been previously traversed by General Donald Stewart's force.

This memorable march was carried out by a force of "marching in the air," *i.e.*, without any base or any assured line of retreat, and which was entirely dependent on the country for its supplies. General Roberts not only relieved Kandahar, but defeated Ayub Khan.

Experience and a knowledge of tactics may enable a commander to meet unforeseen difficulties as they present themselves; but reconnaissances are, under all circumstances, necessary for him to form even an approximate idea of the time his troops will need to overcome whatever obstacles nature or man's ingenuity may put in his path. The chief difficulty a general has to contend with when marching an army in the field is "Transport." Railroads may carry him to a certain point, and there leave him completely at the mercy of such transport as the country (perhaps an openly hostile one) affords—horse-waggons, bullock-carts, elephants, camels, ponies and mules, coolies, steamers, boats. All these different means of transport necessitate different calculations of time, and a knowledge of their special requirements.

Infantry must always regulate the pace of a column comprising the three arms. An army can march rapidly or slowly, according to the efficiency of its infantry and its transport. The infantry soldier in the field has to carry, in addition to his usual kit, extra ammunition, entrenching tools, rations. The even distribution of this extra weight has to be provided for.

To avoid unnecessary fatigue, the following points should be observed. No unnecessary "parading" either before starting, or at the end of a march. A steady long pace, which never ought to exceed $3\frac{1}{4}$ miles an hour. An average of three miles an hour is very good marching. Regular and convenient halts. The even distribution of "duties," advance-guard, outpost, baggage-guard, foraging, convoy and rear-guard. Regular duty rosters. Length of marches to be regulated by the nature of the country, and the state of the roads and means of transport. Weather and climate to be considered. Troops should have hot coffee and bread served out to them, if possible, before starting; if not, they should take the coffee in their canteens, and be allowed to warm it up during a halt.

When troops are conveyed long distances by rail, a certain number of non-smoking compartments should be marked per troop or company. This especially applies to volunteers, a considerable percentage of whom are either non-smokers or moderate smokers. The inconvenience suffered by non-smokers who are cooped up in an over-crowded third-class carriage reeking with tobacco smoke is unnecessary.

Mutton fat or grease of some sort should be regularly served out, and the men encouraged to grease their boots, inside and outside, frequently, especially in dry weather. Badly-fitting and badly-darned socks are too often the cause of discomfort and sore feet.

In hot climates the absence or presence of water, within reasonable distance of the road, will influence a commander, and often induce him to take a longer route to secure a sufficient supply. Water may be carried for men, but seldom in sufficient quantity for animals. The length of columns should be reduced as much as possible, with a view to lessening fatigue. In an average country, with good roads, 12 miles is an ordinary day's march, 15 miles a good march, and 20 miles a forced march.

The following is the approximate time necessary (as laid down by regulation) for a march of 14 miles, when all the precautions necessary in the presence of an enemy are observed (The force is a cavalry one) :—

Regiment or Battery.	On a good road.	On a bad road.	Snow, frost, &c.
H.A.	4 hours ...	6 hours ...	9 hours
Division of Cavalry ...	4 hours ...	7 hours ...	12 hours

Marching and Fighting Endurance of Troops.

In his remarks on the winter campaign in Bulgaria, 1877-78, Lieutenant Greene, U.S. Army, after stating that it was the winter campaign of the Russians which destroyed the military strength of Turkey, and pointing out how much Russia owes to the generals who conducted it, writes as follows :—

"The great and pre-eminent cause of their success lay in the almost boundless patience and endurance of the Russian soldier. From the time the movement was well under way (14th December, Plevna having fallen on the 10th), the men never saw their knapsacks, which remained north of the Balkans, till some time after the armistice.

"They marched, and fought, and slept in snow and ice, and forded rivers with the thermometer at zero.

They had no blankets, and the frozen ground precluded all ideas of tents; the half worn-out shelter tents which the men had used during the summer were now cut up to tie round their boots, which were approaching dissolution; and although an effort was made to shelter the men in the huts in the villages, yet always at least half of them had to sleep out in the open air without shelter.

"Their clothing at night was the same as in the day, and it differed from that of summer only in the addition of overcoat, woollen jacket, and a 'bashlik,' or woollen muffler for the head. Their food was a pound of hard bread and a pound and a half of tough, stringy beef, driven along the road; they were forced to carry six and seven days' rations on their backs (in addition to an extra supply of cartridges in their pockets); there was more than one instance where the men fought, and fought well, not only without breakfast, but without having tasted food for twenty-four hours. Yet, in the face of these unusual privations and hardships, there was not a single case of insubordination; the men were usually in good spirits, and the number of stragglers on the march was far less than during the heat of the preceding summer."

On one occasion, a Russian force advancing to attack, had to cross a river which was barely fordable, and having had previous experience of the discomfort of fighting in *clothes which froze upon them*, the men were ordered to strip and wade across, carrying their clothes and other belongings above their heads. Arriving on the opposite bank, "red as lobsters," they quietly dressed themselves and went into action, and fought all day in the snow. The Russian commanders, however, knew how to stimulate the enthusiasm of

their men. As these fine fellows formed up after their icy bath their general saluted them as usual:

"Good morning, my men."

"Good morning, your Highness."

"Did you burn your feet coming over?"

"No, indeed, your Highness," they answered in a shout, as a broad grin stole over their good-natured faces.

The effect on the health of the men is thus described by Lieutenant Greene in another paragraph:—

"Gourko lost about 2,000 men *hors de combat*, from freezing, during the storm of December 18th-23rd, before his movement began. During the movement Dandeville's column lost about 1,000 more. At Shipka the 24th Division lost over 6,000 men (40 per cent. of its strength) during the same storm, and was, for the moment, completely disorganised and useless. After the march fairly began there were several hundreds, more or less, who gave way under the cold or were frozen, but the number was not very great—not so much greater than the sunstroke and diarrhœa cases in the terrible heat of summer, as to be particularly noticeable.

"In this march (as in most campaigns) bad food and the lack of change of clothing laid the seeds of typhus and typhoid fevers, which broke out at San Stefano in the following month of May, with such terrible malignity that at one time 50,000 men—45 per cent. of the whole force stationed thereabout—were in the hospitals."*

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* "The Russian Army and its Campaign in Turkey." 1877-78. By F. V. Greene, U. S. Army.

The Order of March on Each Road

depends on whether the enemy is near or distant. If near, troops should march in the order in which they are likely to come into action; tactical units should, however, be kept as far as possible intact. Assuming that the advanced guard consists of three and a half squadrons of cavalry and one machine gun, hundred mounted infantry and one machine gun, half company of Royal Engineers, one battery field artillery, two battalions of infantry and one machine gun; the following is the order of march for the main column of a division:—

1. Half a squadron of cavalry.
2. Head Quarter Staff.
3. One battalion 1st. brigade and one machine gun.
4. Divisional Artillery (three batteries) half company R. E.
5. One battalion of 1st. brigade.
6. Small arm ammunition 1st. brigade.
7. Intrenching tools 1st. brigade.
8. Forge waggons of cavalry regiment.
9. Two machine guns.
10. Second brigade of infantry (less one company for rear guard).
11. Small arm ammunition carts.
12. Tool carts.
13. Infantry and artillery reserve ammunition train.
14. Ambulance and field hospital.
15. Led horses.

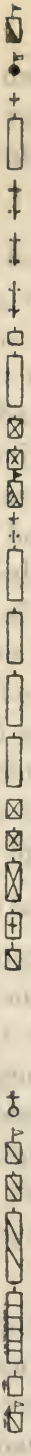
Interval of 100 to 1000 yards according to proximity of enemy:—

16. Non-combatant staff.
17. Military police.
18. Baggage of Divisional Head Quarter Staff.
19. Baggage of troops according to their order.
20. Commissariat train.
21. One company of infantry.
22. Military police.

(*Vide* Plate XII.)

If the enemy be distant, the convenience of the troops only need be consulted. If possible a separate road should be told off to each arm; the *shortest* to the infantry, the *hardest* to the artillery, and the *softest* to the cavalry; each column must be preceded by its own advanced-guard, and so timed that all arrive about the same time at the new halting-ground.

If only one road is available, the cavalry and artil-



Half Squadron

Head-Quarter Staff

One Machine Gun.

One Battalion 1st Brigade.

Three Batteries R.A.

Half Company R.E.

One Battalion 1st Brigade.

Small-Arm Ammunition.

Tool Carts 1st Brigade.

Cavalry Forge Wagons.

Two Machine Guns.

Second Infantry Brigade.

Small-Arm Ammunition.

Tool Carts.

Infantry and Artillery Reserve Ammunition.

Field Hospital.

Led Horses.

Non-Combatant Staff.

Military Police.

Baggage of Head-Quarter Staff.

Baggage of Troops in order of their March.

Commissariat Train.

One Company Infantry.

Military Police.

ORDER OF MARCH FOR MAIN COLUMN OF A DIVISION.

ORDER OF MARCH FOR MAIN COLUMN OF A DIVISION

lery should march first, as their work commences as soon as they reach camp; only when the road is likely to be much cut up, should the infantry march first.

Rules as to Halts.

The first halt should take place about 30 minutes after starting, and should be for 15 minutes, to enable the men to re-arrange their belts, valises, &c., which are often put on hastily after striking the camp and packing the baggage. If the march is under 14 miles, halt for 30 minutes half way; if over 14 miles, halt for 15 minutes every two hours. This is the German rule. Never halt in villages or short defiles; and, when halted, invariably throw out vedettes and sentries, and, if the halt is of any duration, and the men break off and are allowed to take off their accoutrements, *march outposts* should be posted.

Avoid old camping-grounds, if possible.

Always obtain the best shelter procurable for all troops, and avoid unnecessary bivouacks, especially in wet weather, or when fire wood is not procurable.

Use of Several Parallel Roads.

By marching on parallel roads a wider area of country is opened out and made available for supplies, the length of columns is also reduced, and increased speed with lessened fatigue is ensured, the heads of columns are more easily reached, deployment is facilitated.

Free communication must, however, exist between the different columns marching on parallel roads, or, being isolated, they may be beaten in detail.

Night Marches,

as a rule, should be avoided; they render men unfit to fight next day, are liable to panic, and cause many delays and annoyances. They are admissible in hot climates or as preliminary to a daybreak attack upon an enemy, who is very strongly posted, or who will probably not

wait to fight if he gets warning of a hostile advance. The remarkable march which preceded the battle of Tel-el-Kebir furnishes a rare example of a carefully planned and boldly executed night advance against a strong position which resulted in a complete victory. The country was open and Lord Wolseley skillfully contrived to bring up his troops in order of battle to the right place, at the right time, with the precision of a parade manœuvre.

Only those who have taken part in prolonged night operations can fully realise how difficult it is to keep touch between bodies of troops in a roadless, or a mountainous country in the dark.

Delays and mishaps that are almost inconceivable by day, occur with a dreary monotony at night, which is not relieved by the anxiety they cause to those who know that some unforeseen hitch has taken place.

At night an ample margin of time should always be allowed for these delays.

For order of march, and rules to be observed at night by marching columns within striking distance of an enemy (*Vide* Chapter XVIII.)

Flank Marches.

A flank march is one in which a flank is exposed to the enemy. It is, therefore, very dangerous when within striking distance, say half a day's march.

Reconnoitre the country in front and on the exposed flank. Keep natural obstacles, rivers, defiles, etc., between the nearest column and the enemy, and a *flank guard*, composed of infantry, in the formation of outposts moving to a flank about two miles from the most exposed columns, and between it and the enemy. The order of march should be that of columns in echelon, advancing from the flank farthest from the enemy, with artillery at the head and tail of each column, advanced and rear-guards, composed entirely

PLATE XIII.

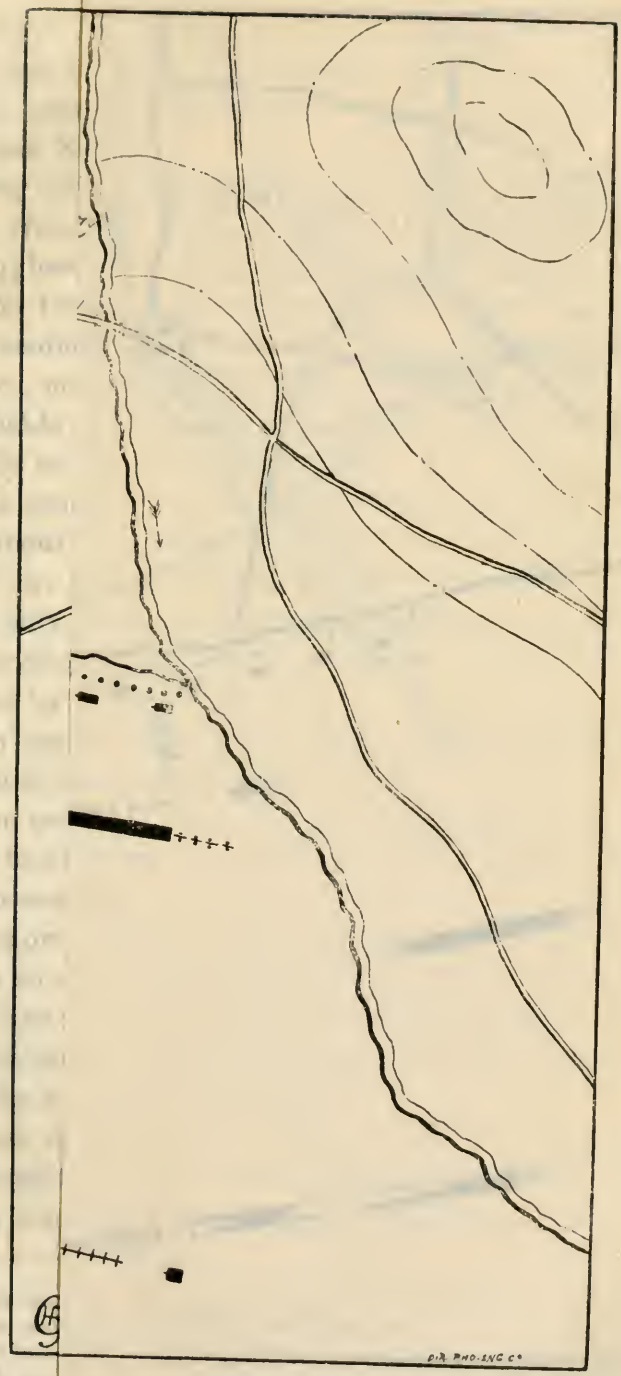


ILLUSTRATION OF A FLANK MARCH.

of infantry. As secrecy is essential, the cavalry, baggage trains, etc., should be kept on the flank farthest from the enemy, and on a separate road if possible (*Vide* Plate XIII.)*

During a march of a large army a certain percentage of men, from one cause or another, become used up. All stragglers, as soon as they are fit to resume duty, should be formed into companies and utilized on the lines of communication.

Forced marches should rarely be undertaken unless the probable gain is sufficient to counterbalance the loss likely to be occasioned by them.

While armies are being concentrated, troops can be moved about by rail; but after war has commenced railroads are apt to be blocked by traffic, and when there is only a single line it is sometimes quicker to move a portion of an army, *i.e.*, the cavalry, artillery, and trains by road than by rail.

In an enemy's country it is very difficult to move large bodies of troops by rail.

Under ordinary circumstances the number of troop trains to be counted on daily ought to be pretty accurately ascertained.

For short distances, under 120 miles, it is quicker to march an army corps than to convey it by rail along a single line; it is only when a railroad extends to a greater distance that there is any saving of time in using it for a whole army corps.

A train can convey 1 battalion, and 3 trains can take a regiment of cavalry, or a battery of artillery. An army corps, with its baggage, requires 90 trains.

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* A flank march in the presence of the enemy can only be conducted with sufficient safety when the formation adopted at the commencement of the movement is such as to ensure a right timed and properly organised deployment towards the enemy. Such a flank march within effective range of the enemy could, however, only be carried out when covered by the formation of the ground ("German Field Exercise").

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Railways are chiefly used as a means of provisioning and supplying an army.

Sea Transport depends on the number and condition of vessels available. The chief difficulties connected with this means of transport is embarkation and disembarkation.

To convey an army across the sea necessitates complete command of it, or, at any rate, a large fleet kept free from troops to escort the convoys, and ready for action.

There is very little difference between the speed of steamers and the rate of railway travelling suitable to the conveyance of large bodies of troops.

River Transport. Steamers, barges, etc., may be utilized chiefly for the conveyance of infantry, and for supplying an army.

Test Questions.

Rear-Guards and Marches.

I. You are in command of a rear-guard covering the retreat of a defeated army. You find, after some time, that the pursuit of the enemy is slackening, later on you have reason to believe the pursuit has ceased altogether. How would you act in each case?

II. An army is compelled to make a flank march. Three parallel roads are available, the enemy are within striking distance on the right flank. Describe the dispositions you would make for the march of the columns and any other precautions you would take.

III. How is it that the rear-guard, which is far weaker than the main body, has power to delay the advance of a victorious enemy? Upon what does this power depend?

IV. To what points should the attention of officers be directed in connection with the maintenance of efficiency in the troops during a march?

V. What is a flank march, and on what does its success depend? When is it a dangerous undertaking?

VI. In selecting a rear-guard position, what points should be particularly attended to by a commander?

VII. Suppose a division to be moving along a road, and the enemy is known to be at hand, in what order would the several arms, ammunition, baggage carts, etc., march? What difference would be made in the order of march if the enemy were distant?

VIII. What are the advantages to be derived from the use of several parallel roads when marching an army through a country? What is the chief risk entailed, and how can it best be guarded against?

IX. What must determine the composition and strength of a rear-guard, and from what troops should it be selected if possible?

X. Why should a rear-guard, as a general rule, not make counter-attacks? and under what special circumstances may the commander of a rear-guard consider it advisable to make one?

XI. How, and in what order, should a small rear-guard of all arms fall back before a superior force in an open country?

XII. What is the object of "timed" marches?

XIII. In a march of a force of all arms what precautions are necessary to reduce fatigue to the utmost?

CHAPTER XIII.

RIVERS.

RIVERS are considered very formidable obstacles: nevertheless, it is generally recognised that a river line of defence is not a desirable one.

A long line of defence, such as a mountain range or a river, can only be watched by posting isolated bodies of troops at different places throughout its whole extent. This, of course, means dissemination, while to oppose the enemy at the point he selects for crossing, you need a concentration of all your forces. Unless, therefore, the line to be defended is limited in extent in proportion to the numbers available for defending it, a river line is an extremely vulnerable barrier.

Even the Danube, of which the main stream from Widdin to Silistria, a distance of 250 miles, averages about 1,000 yards in width, having numerous fortresses, and command of the northern bank throughout the entire distance, failed to stop the Russian invasion in 1877.

The Turkish resistance was certainly not energetic; still, opinions are divided as to whether a more prolonged *passive* resistance would have materially aided them in repelling the invasion.

Some of the great rivers of the world—for instance, the Indus or the Jumna—for six months in every year are impassable, except by means of boats. The magnificent bridges across these mighty rivers rank amongst the greatest engineering triumphs of the age. They take years to build, and are quite beyond the scope of all operations of war.

To attempt to convey an army over a raging torrent from three to four miles broad, in open boats, or even river steamers, would be an operation, apart from its difficulty, certain to attract so much attention that even the most apathetic defenders could oppose the crossing in force, wherever it was attempted. During the melting of the snows the Indian rivers may be said to be impassable barriers to an army hampered with the requirements of modern war. As the hot weather would be a very unsuitable season for campaigning, these rivers need only be contemplated in a military sense (so far as invaders are concerned) when confined to their natural beds, and not when overflowing their banks for miles on either side.

They constitute our chief natural safeguard against any successful invasion of India from the north and north-west.

The rivers we have principally to consider are those of Europe, and of these the Danube, notably one of the most formidable, has never yet stopped an invasion.

The Defence.

There are two methods of opposing an invader's crossing. First, by offering an active resistance; secondly, a passive resistance.

When the defenders hold one or more bridges, and occupy various positions along their own bank, with the power of concentrating at intermediate points, they are said to offer an active resistance to the passage of the river.

This method, in addition to opposing the invaders more or less vigorously along the line, gives to the defenders the power of issuing over the river on the assailants' side, and delivering counter-attacks. It

entails great dissemination even more than passive resistance, and the troops pushed over on the enemy's side are liable to be beaten and forced to surrender or to retreat over their own bridge, in contact with the invaders, who would thus gain their object without the trouble of constructing a bridge for themselves.

The success of this mode of defending a river will chiefly depend on the handling and posting of the different detachments, and their power of speedy concentration, which must, however, depend on the extent of front to be guarded.

The passive defence of a river is when the defenders keep their own side (with the exception of scouts pushed over), and watch the easy crossing-places, holding the bulk of their forces in rear, and in readiness to march wherever the enemy attempts to land a covering party.

Both methods are more or less unsatisfactory, and, unless the river is broad and short, rarely succeed in their object.

The enemy is certain to conceal his real intentions, and whenever he attempts to cross, will do so at several points simultaneously. Once the enemy has gained a footing for the infantry forming his covering party, the passage is more than half lost, for the defenders will probably be engaged at two or more places simultaneously, and should the assailants succeed in effecting a crossing at even one out of three or more places attempted, the isolated detachments of the defenders can be attacked in detail.

There is another way in which a river line or a chain of mountains can be utilized by the defenders, often with the greatest probability of success. It is to watch the various points of passage throughout with

scouts, and keep the main army of the defence at some central point in rear of the river between the assailants and their *objective*.

If the scouts report that the enemy are about to cross at a certain point within reach, *i.e.*, if his real intentions are made clear, the defenders from their central position may be able to bear down upon him and strike a sudden and decisive blow, before all his troops have crossed: failing this, the defenders should select a naturally strong position, which the enemy, supposing him to have surprised the passage, will not dare to pass unheeded, lest he expose his flank and communications.

In this case the assailants would be forced to attack a carefully-chosen and strongly-entrenched position, with their backs to a defile, and with probably only one line of retreat available, either through a mountain gorge, or over a bridge.

Beyond these few simple principles it is impossible to give directions for opposing a crossing.

Strategical considerations will influence the conduct of both sides to a large extent; but tactical movements within striking distance of an enemy must be planned and carried out on the spot, and will always be decided in favour of the commander who can most readily adapt himself to circumstances, and take advantage of the nature of the ground, the peculiarities of his troops, and the mistakes of his enemy.

The Attack.

The first thing to be done is to reconnoitre the banks carefully, and push scouts over on the enemy's side to discover his dispositions. In order to do this thoroughly the assailants' own side must first be cleared of the defenders' scouts.

Meanwhile the troops should be concentrated at two or more points within a day's forced march of the river, and the most careful preparations made to prevent any hitch occurring at the last moment. With this object boats should be procured, rafts constructed, pontoons collected, and the bridges even put together, if time permits, to ascertain that they are of the required length. The actual crossing-place, or places, will be finally fixed upon by the Commander-in-Chief, in accordance with the reports he may receive from his engineer and staff officers selected to reconnoitre.

It is seldom that an army can hope to effect a crossing exactly at the most desirable spot, as the enemy may be expected to have taken measures to frustrate it; for this reason what are called *secondary crossing places* are most essential, and the preparations for these secondary crossings should, if necessary, be as carefully planned as the principal one. If energetically commanded, the defenders will probably be in force to oppose all the most likely crossings.

Though it cannot be expected that all the requirements of a good crossing place will be obtainable, they may be briefly enumerated as follows :—

1. Suitable cover on the enemy's side for the landing and establishment of a covering party of infantry, and to defilade the bridge.
2. Command of bank, and suitable ground for guns to be got into position, to protect the crossing of the covering party, and subsequently the bridge, during its construction.
3. A bend of river towards the assailants, to enable them to direct a convergent fire on the opposite side.

4. An island, or islands.
5. A tributary stream.
6. Good sound ground suitable for embarkation, and disembarkation, and room to deploy after crossing.
7. Cover on the assailants' side, to conceal the movements and concentration of troops within easy reach of the river.

Bridges.

There are three kinds of bridges :—

1. Permanent bridges, entailing a considerable amount of time and labour.
2. Flying bridges, on trestles, only suitable to medium sized rivers, and moderate currents.
3. Pontoons, and bridges of boats.

The latter are the easiest to throw across; but are liable to get out of gear, and also to be swept away.

The principles which govern the tactical operations in all three cases are the same.

All preparations completed as regards material, the first thing to be accomplished is the landing and establishment of a suitable covering party of infantry.

We read in ancient history that the swimming and fording of rivers were among the regular exercises of the Roman legionary. "Though immersed up to his chin in water, he was an expert in plying his hatchet against the stakes which opposed his passage, while he held his buckler over his head not less steadily than on dry land. Behind him a constant storm of stones and darts was impelled against the enemy from the engines which always accompanied the Roman armies." The enemy driven from their position, Cæsar established his covering party, and commenced his bridge.

In the absence of boats, or other means of crossing, in these days, as of old, covering parties may be forced to swim, although the swimming of rivers is not amongst the regular exercises of the army. Substitute guns for engines, and the principles of tactics for the passage of a river are still those which governed Cæsar.

After a covering party has once established itself, and driven off the enemy, the bridge is commenced from both ends, and pushed on incessantly until completed. Meanwhile, infantry in sufficient numbers should be got across to protect the flanks and front of the covering party, and the moment the bridge is completed, the artillery, cavalry, and various trains should be moved rapidly across.

The Passage of the Leck, in 1631.

The crossing of the River Leck, by Gustavus Adolphus, April, 1631, in the presence of 22,000 troops under the veteran commander, Tilly, furnishes a rare example of this most hazardous operation, and also a proof of the consummate knowledge of tactics possessed by the King of Sweden. It is thus described by Defoe, in his "Memoirs of a Cavalier":—

"Tilly, joined by the Duke of Bavaria, had about 22,000 men distributed along the Bavarian bank of the River Leck, and occupied all the convenient places on the river to dispute the King of Sweden's passage.

"The King, informed of Tilly's dispositions, resolved to go and view the disposition of his troops, and setting out with an escort of horse, gained a height from whence he could see the course of the river for several miles. Turning to the north he observed a bend of the river towards his own side, and at once said, 'There's a

point will do our business, and if the ground be good, I'll pass there; let Tilly do his worst.'

"He immediately directed a small party of horse to bring him word how high the bank was at the bend; 'and he shall have fifty dollars,' says the King, 'that will bring me word how deep the water is.'

"A sergeant of dragoons obtained leave to go disguised as a boor, and taking with him a long pole, went boldly to the bank of the river, and calling to the sentinels which Tilly had placed on the other bank, asked them if they could help him over the river, and pretended he wanted to come to them. At last, being come to the point where the bend was, he stands parleying with them a great while, and pretends to wade over, thrusting his pole in before him, till, being gotten up to his middle, he could reach beyond him, where it was too deep. 'Why, you fool,' says one of the sentinels, 'the channel of the river is 20 feet deep.' 'How do you know?' says the dragoon. 'Why, our engineer says he measured it yesterday.'

"This is what he wanted; but, not yet fully satisfied, "'Ay! but,' says he, 'may be it may not be very broad, and if one of you would wade in to meet me till I could reach you with my pole, I'd give him half a ducat to pull me over.'

"One of the soldiers immediately strips, and goes in up to the shoulders, and our dragoon goes in on his side. The stream takes the other soldier away, and he, being a good swimmer, came over to the dragoon's side.

"After some conversation, the dragoon pretended to be sorry he could not get over the river, and makes off, the Bavarian returning to his comrades on his own side.

"The King having examined the dragoon, understood from him that the ground on his side was higher than the enemy by 10 or 12 feet, and a hard gravel. Hereupon the King resolved to pass there, and himself gives particular directions for a bridge.

"His bridge was only loose planks laid upon large trestles; the trestles were made higher than one another to answer to the river as it became deeper or shallower, and was all framed and fitted before any appearance was made of attempting to pass. When all was ready the King brings his army down to the bank of the river, and plants his cannon, as the enemy had done, some here and some there, to amuse them.

"At night, on the 4th of April, the King commanded 2,000 men to march to the bend and throw up a trench on either side, and quite round it, with a battery of six pieces of cannon on each end, besides three small mounts, one at the point and one at each side of the bend, which had each of them two pieces upon them.

"This work was begun so briskly, and so well carried on, the King firing all night from the other parts of the river, that by daylight all the batteries at the new works were mounted, the trench lined with 2,000 musketeers, and all the utensils of the bridge lay ready to be put together.

"Now the Imperialists discovered the design, but it was too late to hinder it. The musketeers in the great trench and the five new batteries made such continual fire, that the other bank which, as said before, lay 12 feet below them, was too hot for the Imperialists; whereupon Tilly, to be provided for the King at his coming over, falls to work in a wood right against the point, and raises a great battery for twenty pieces of cannon, with a breastwork or line as near the river as he could to cover his men, thinking that when the King

had built his bridge, he might easily beat it down with his cannon. But the King had doubly prevented him, first by laying his bridge so low that none of Tilly's shot could hurt it; for the bridge lay not above half a foot above the water's edge, by which means the King, who had showed himself an excellent engineer, had secured it from any batteries to be made within the land, and the angle of the bank secured it from the remoter batteries on the other side, and the continual fire of the cannon and small shot beat the Imperialists from their station just against it, they having no works to cover them. In the second place, to secure his passage, the King sent over 200 men, and after that 200 more, to cast up a ravelin on the other bank, just where he designed to land his bridge. This was done with such expedition that it was done before night, and in condition to receive all the shot of Tilly's great battery, and effectually covered his bridge.

"While this was doing, the King, on his side, lays over his bridge. Both sides wrought hard all day and all night, as if the spade, not the sword, had been to decide the controversy, and that he had gotten the victory who's trenches were first ready. In the meanwhile cannon and musket-bullets flew, and both sides had enough to do to make their men stand to their work. The King, in the hottest of it, animated his men by his presence, and Tilly, to give him his due, did the same. The execution was so great that many officers on both sides were killed and wounded. Tilly was obliged to expose himself.

"And here, about one o'clock, much about the time that the King's bridge and works were finished, and just as Tilly had ordered his men to fall upon our ravelin with 3,000 foot, was the brave old Tilly slain with a musket-bullet in the thigh. He was carried off

to Ingolstat, and lived some days afterwards; but died of that wound the same day as the King had his horse shot under him at the siege of that town.

"We made no question of passing the river here, having brought everything so forward, and with such extraordinary success; but we should have found it a very hot piece of work had Tilly lived one day more; and, if I may give my opinion of it, having seen Tilly's battery and breastwork, in the face of which we must have passed the river, I must say that whenever we had marched, if Tilly had fallen in with his horse and foot placed in that trench, the whole army would have passed as much danger as in the face of a strong town in the storming a counterscarp. The King himself, when he saw with what judgment Tilly had prepared his works, and what danger he must have run, would often say that day's success was every way equal to the victory of Leipsic.

"Tilly being hurt and carried off, as if the soul of the army had been lost, they began to draw off. They drew off by degrees, sending their cannon and baggage away first, and leaving some to continue firing on the bank of the river to conceal their retreat.

"The river preventing any intelligence, we knew nothing of the disaster befallen them; and the King who looked for blows, having finished his bridge and ravelin, ordered to run a line of palisadoes, to take in more ground on the bank of the river, to cover the first troops he should send over. This being finished the same night, the King sends over a party of his guards to relieve the men who were in the ravelin, and commanded 600 musketeers to man the new line of the Scots brigade.

"Early the next morning a small party were sent out to learn something of the enemy, commanded by

Captain Forbes, of my Lord Reay's regiment, the King observing they had not fired all night; and while this party were abroad the army stood in battalia, and Sir John Hepburn, whom, of all men, the King most depended upon for any desperate service, was ordered to pass the bridge with his brigade, and draw up without the line, with command to advance as he found the horse, who were to second him, came over.

"Sir John being passed, meets Captain Forbes, and the news of the enemy's retreat. He sends him directly to the King, who was by this time at the head of his army, in full battalia, ready to follow his van-guard, expecting a hot day's work of it. Sir John entreated the King to give him orders to advance, but the King would not suffer him, for he was ever upon his guard, and would not venture a surprise. So the army continued on this side of the Leck all day and the next night.

"In the morning the King ordered out 900 horse and 800 dragoons, and ordered us to enter the wood by three different ways, but so as to be able to support one another, and then ordered Sir John Hepburn with his brigade to advance to the edge of the wood to secure our retreat; and, at the same time, commanded another brigade of foot to pass the bridge, if need were, to second Sir John Hepburn, so warily did this prudent general proceed."

The Passage of the Danube, in 1877.

The passage of the Danube by the Russians, in 1877 affords a striking example of how a formidable river should be crossed. (*Vide* Plate XV.)

By the end of May the Russians had concentrated four corps at a central point in the vicinity of Bucharest.

with one corps at Slatina; but their preparations for crossing the river were, from various causes, delayed until the 26th June (*Vide* Map, Plate XIV.)

Meanwhile the Turks occupied the fortresses of Nikopolis, Rustchuck, and Silistria, and collected some troops at Turtukai. They also had standing camps of observation at Sistova, Parapan, and other places along the southern bank of the Danube, which commands very considerably the northern, or Roumanian, side throughout.

The Russians had brought up their pontoon-trains, and had also collected a considerable number of boats. Between the 20th and 24th of June the various corps in the neighbourhood of Bucharest had moved down, and were concentrated between Beia and Segartcha, a position threatening Rustchuck, Sistova, and Nikopolis, and leaving the Turks in ignorance as to their real intentions.

After the completion of a final and personal reconnaissance on the 24th June, the Grand Duke decided to cross at Zimnitza-Sistova, and on the same day he gave orders for the siege-batteries in position before Rustchuk and Nikopolis to begin the bombardment of those two fortresses, and issued secret orders that Zimnitza-Sistova was to be the actual spot where a crossing was to be attempted, directing the IXth Corps at Slatina to co-operate by making a feint at crossing at Nikopolis.

A Division of the 8th Corps, with some light guns, and the whole of the pontoon trains and boats was told off to form the covering party.

This division, composed of 15,000 infantry under General Dragomiroff, arrived at Zimnitza on the afternoon of the 26th of June, and, as soon as it was dark, launched their pontoons and boats on the stream at Zimnitza. Meanwhile, during the launching of the

RUSSIA
Sulina
BLACK SEA

MAP OF THE RIVER DANUBE.

boats five batteries were placed in position on the north bank, to the east of an island, behind which was the point of embarkation; these guns were directed to cover the passage of the covering party of infantry destined to land at the mouth of a small stream on the Turkish side, opposite to where the Russian batteries were in position.

Between Nikopolis and Rustchuck the foot-hills of the Balkan range of mountains stretch down to the Danube, and the southern bank of the river commands the northern by several hundred feet. Under these circumstances the landing-place was well chosen.

The first detachment, 2,500 men, started to row over at 1 a.m. on the morning of the 27th of June, and landed at the mouth of the above mentioned stream. The Turkish outposts discovered them just as they reached the shore, but too late to prevent their landing. The Turks had in the immediate vicinity two camps, computed at about 5,000 men each, and from the most easterly of these camps they advanced to oppose the covering party, when some severe fighting ensued.

The Russians being steadily reinforced by fresh boatloads of their comrades, after advancing slowly up the stream, by 8 o'clock a.m. secured some heights on its right bank or east side, which protected them from the Turks on that side. Meanwhile, General Dragomiroff was collecting the remainder of his division as it got over, and by 11 a.m. he had about 10,000 men on the west bank of the stream, and ordered a general advance against the Turkish troops occupying the heights directly facing the island, while the troops who had first landed held the ground they had captured, and protected Dragomiroff's left flank during his advance, which was also covered by the fire of the guns in position on the north side of the river.

AUSTRIA
DANUBE
VIDIN
Lom

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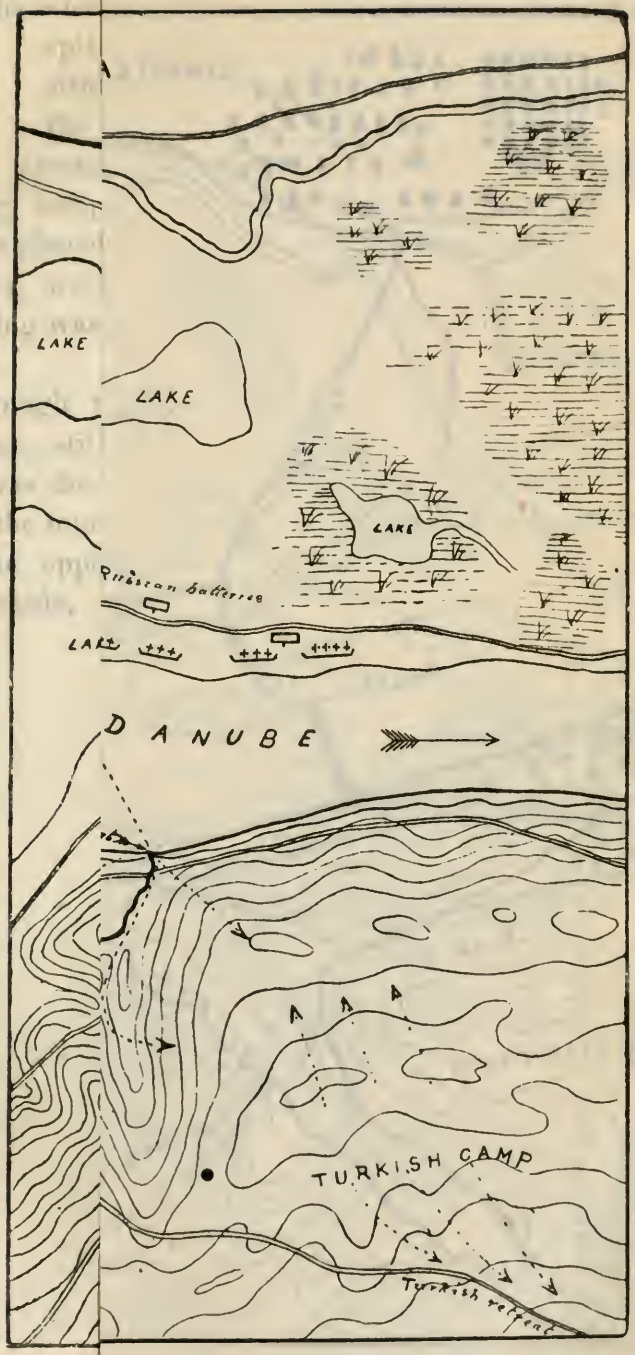
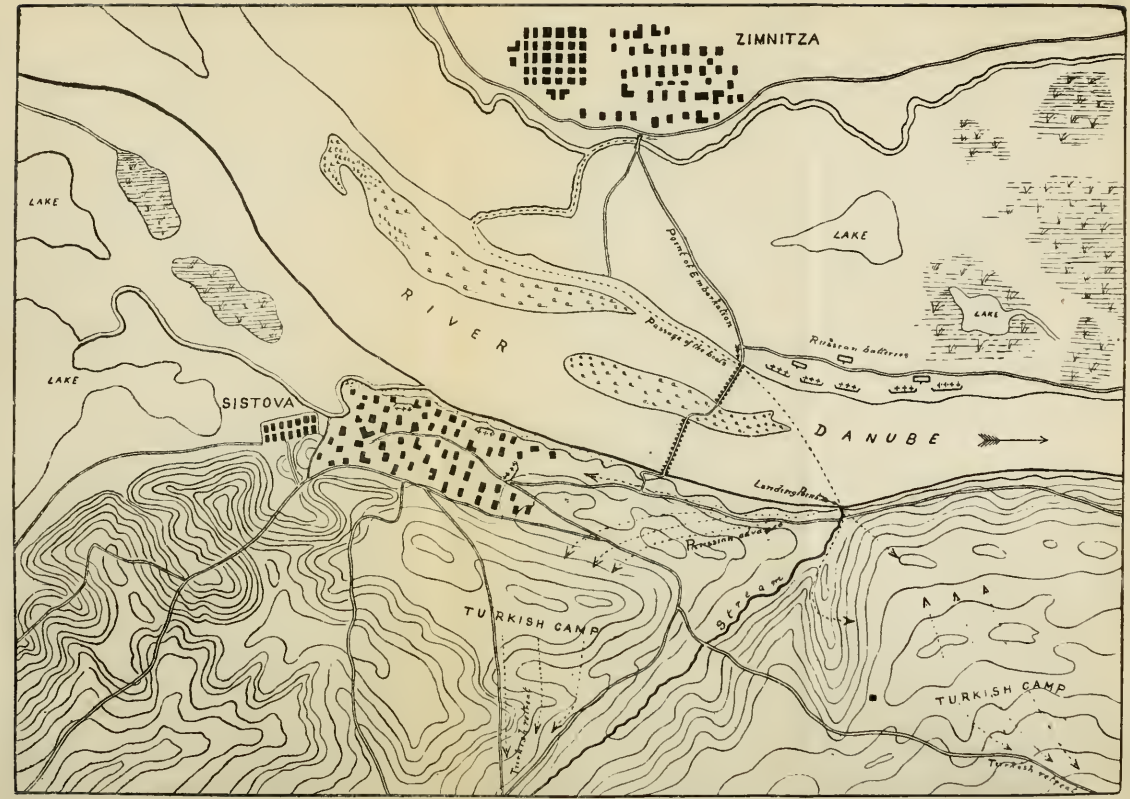
The result was that the Turks were divided and retreated in a south-easterly direction to Tirnova. By 3 o'clock the Russians had established themselves on the heights held by the Turks in the morning. The Russians lost 800 men and 31 officers killed and wounded, of whom the greater portion belonged to the regiment which landed first, and fought its way up the little stream in the morning. By dark the same evening the 2nd Division of the 8th Corps had been ferried across the stream, making in all about 25,000 infantry, under General Radetzy, and the passage was secured. Next day the bridge was commenced, which was completed on the 2nd of July, when the army at once marched over.

In this crossing many of the most important principles of river tactics were triumphantly demonstrated.

1. The collection of pontoons for bridging the stream.
2. Concentration of troops at a strategical point equidistant from several likely crossing-places.
3. Secrecy, up to the last moment, as to the actual place of crossing.
4. Careful reconnaissances.
5. Selection of point possessing the following tactical advantages, viz., a tributary stream (which was utilized for conveying the pontoons and boats down to the point of embarkation), and the presence of two islands, which covered the movements of the invaders for a considerable portion of their passage, and lessened the labour of constructing the bridge.


LAKE
LAKE
LAKE
Russian batteries
LAKE
DANUBE
TURKISH CAMP
Turkish retreat



PASSAGE OF THE DANUBE BY THE RUSSIANS, 1877.

6. The selection of a favourable point to land at, in spite of the natural difficulties of the situation, owing to the entire command of the banks being on the Turkish side.

The arrangements for the embarkation of the covering troops, and for the co-operation of the batteries placed in position on the assailants' side of the river, were all very complete, and apparently everything was timed in such a manner as to ensure success.

Although the Turks did not offer a desperate resistance, still the loss incurred by the regiment which was the first to land was very severe in proportion to the number of men engaged (2,500), and at one time the opposition it encountered must have been considerable.

LAKE
LAKE
SISTOVA

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CHAPTER XIV.

Defiles.

A DEFILE, in a military sense, is a passage which can only be traversed by a force on a tactically restricted front, in proportion to its strength. Hence, defiles of all descriptions are dangerous obstacles when within striking distance of an enemy.

On the other hand, defiles, when in the possession of the defenders, often enable an inferior force to bar the way to a much stronger one, and the famous line—in yon straight path a thousand might well be stopped by three—may, under certain circumstances, still be applicable. Defiles are described as long or short; their flanks as accessible or inaccessible. A long defile with inaccessible flanks, if scientifically defended, even by a numerically inferior force, may be looked upon as an almost impassable obstacle. A causeway of considerable length, or a gorge through precipitous heights, inaccessible to infantry, if defended in rear with guns and infantry, posted so as to command the passage and the exit, cannot, in these days of arms of precision, be forced without an expenditure of life too appalling to contemplate. Indeed, such passages, if they cannot be turned or surprised, may be deemed impassable.

A short defile, with open though inaccessible flanks, such as a bridge or a ford over a river, so long as the actual passage remains under the aimed fire of the defenders' guns or entrenched infantry, will rarely justify an open assault.

History affords instances of bridges of considerable length having been forced in the presence of highly-trained and disciplined troops; but since the days of Lodi and Arcola, owing to the increased accuracy of fire-arms, unless the defenders' artillery and rifles are both silenced, and compelled to withdraw out of range, an open frontal assault in column can hardly be expected to succeed.

A MOUNTAIN DEFILE is defended from the *flanks* if the flanks are accessible (Plate XVII., Fig. 1), otherwise in *rear* (Plate XVI., Fig. 1); except when it is necessary to cover the retreat of troops through the defile, in which case, the defile is not only defended in rear, but held in front by lunettes and barricades (Plate XVI., Fig. 3.)

A CAUSEWAY is defended in the same manner as a mountain defile, the flanks of which are not accessible (Plate XVI., Fig. 2).

A BRIDGE is also defended in rear (Plate XVII., Figs. 2 and 3), except when it is necessary to cover the retreat of troops across it, in which case it is held also in front by a *tête de pont* (Plate XVI., Fig. 4), and except when cover is available on both sides of the river, in which case the position in front is held as long as possible, and the position in rear afterwards defended (Plate XVII., Fig. 4).

Frequently, during a retreat, the entrance to a defile with inaccessible flanks may have to be guarded to enable the rear guard to be withdrawn in safety from a position it has been holding in front of it. Nevertheless, after covering the withdrawal of any troops outside, the main defence would still generally be in rear.

The chief danger of the defence in front is that it may be so prolonged as to enable the assailants to enter and issue from the passage in contact with the last of

the covering party, and thus compel the defence in rear to restrain their fire for fear of shooting their own men.

Defiles with flanks accessible are defended from the flanks at the entrance, because the assailants will direct all their efforts to securing the flanks before entering the passage which they command.

Sometimes a small force may considerably prolong the defence of a defile, by holding a position in the interior which cannot be turned; but with an adequate force to defend it with, a defile should rarely be defended in the interior.

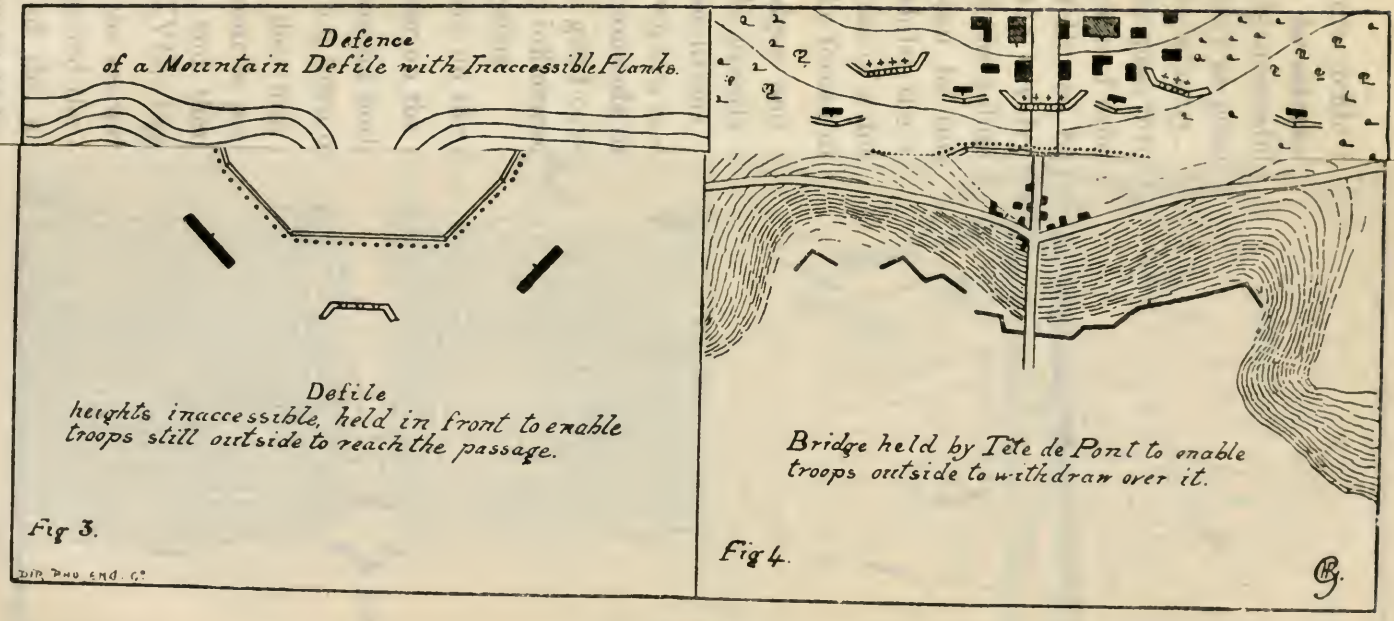
Hollow roads, railway cuttings, &c., constitute defiles of a minor description, and must be defended on the flanks, which are usually accessible.

Narrow lanes, especially if they are deep, can best be barricaded by cutting down trees and laying them across.

Embankments may be defended as causeways. A deep, transverse cutting will cause a considerable amount of delay, if the material for repair is made away with; for, in such situations, trees, planks, &c., wherewith to bridge the chasm, are not often procurable.

The Passage of Defiles.

Defiles should be carefully reconnoitred before any attempt is made to pass through them in the presence of an enemy, and every endeavour should be made to turn them. Until the return of the reconnoitring parties, guns should be posted to bring a cross-fire to bear on the entrance. If the defile is apparently unoccupied mounted infantry or cavalry scouts should pass rapidly through and reconnoitre sufficiently far on the opposite side to be able to report that there will be time for the advanced guard not only to pass, but to deploy before it can be engaged.


Defence
of a Mountain Defile with Inaccessible Flanks.
Defile
heights inaccessible, held in front to enable
troops still outside to reach the passage.
Fig 3.
Bridge held by Tête de Pont to enable
troops outside to withdraw over it.
Fig 4.

DEFILES.

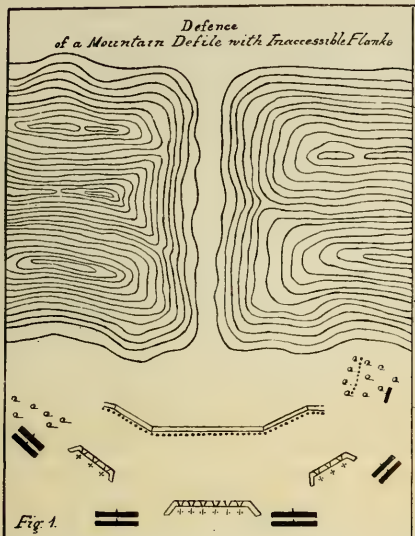


Fig. 1.

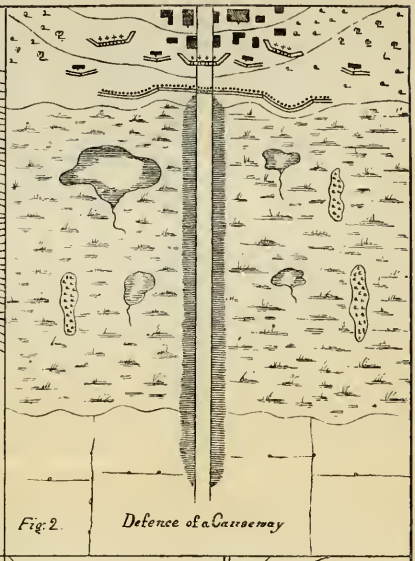
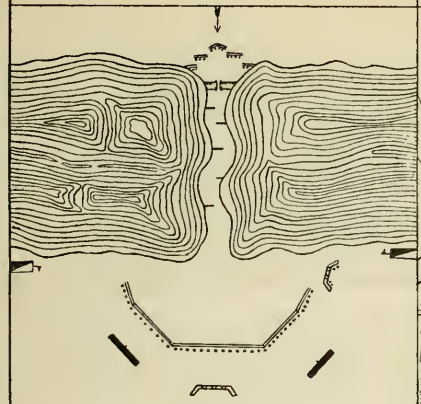
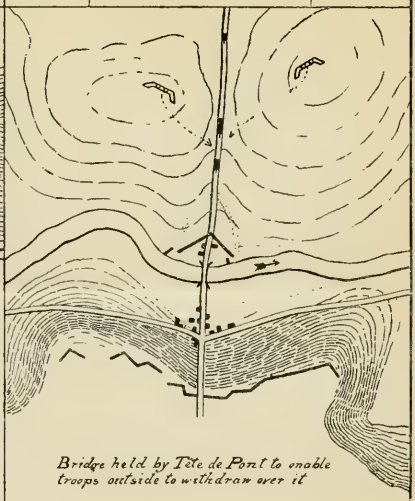


Fig. 2. Defence of a Causeway



Defile
heights inaccessible, held in front to enable troops still outside to reach the passage.

Fig 3.



Bridge held by Tête de Pont to enable troops outside to withdraw over it

Fig 4.

DEFILES.

If the defile is occupied, and cannot be turned, it should be attacked by artillery and infantry. If the attack is successful, some guns should be pushed through as quickly as possible to take up a position on the far side with the infantry. The remainder of the advanced guard will then pass through in the following order, a battalion or brigade of infantry leading, then the remainder of the guns, followed by the main body of the infantry, and lastly the cavalry, which will resume its place at the head of the column before the march is resumed. If a defile can be turned, the enemy must be engaged in front whilst the turning movement is carried out. If the flanks of a defile are accessible, the passage should never be forced until the flanks have been secured.

Bridges and fords are defiles, but their defence depends greatly upon the width of the river, and on local conditions. A bridge is easily defended when it is low down in a re-entering angle, and when the defender's side commands the other, and the enemy's side does not possess good cover. The defence of a bridge or a ford will be influenced chiefly by the consideration whether there exists

Cover on the defenders' side.

Cover on the assailants' side, or

Cover on both sides, as in the case of a river running through a town or village.

In the first instance, the defenders would first endeavour to prevent the assailants getting down to the bridge, and then oppose any attempt at crossing (*Vide* Plate XVII., Fig. 2).

In the second case the defenders would (unless they commanded the other bank), retire some distance out of range of the assailants, and take up an entrenched position so as to command the bridge, and the exit from

PLATE XVI.

Defiance
of a Mountain Defile with Impassable Flames

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it, and thus render useless the cover possessed by the assailants (*Vide* Plate XVII., Fig. 3).

In the last case the defence would be in front of the bridge first, and afterwards in rear; every advantage being taken of the cover afforded by the houses, enclosures, &c., to prevent the enemy approaching the bridge (*Vide* Plate XVII., Fig. 4).

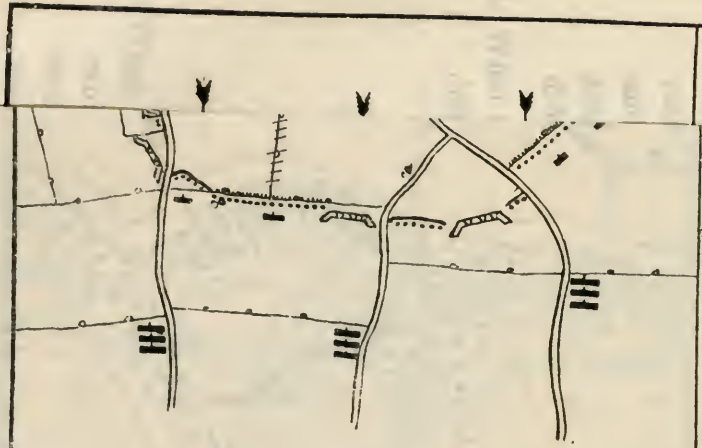
But care must be taken, if obliged to retreat, that the defenders retire in time to get across the bridge safely before the assailants rush it, or bring their guns to play upon it. There are, then, two courses open to the defenders, viz., to blow up the bridge, or defend it from the rear; if they are expecting reinforcements, and want to use the bridge, the latter course will be adopted.

It should be borne in mind that troops falling back are difficult to rally, and cannot always be relied upon to defend a second position. If reserves are available, it is advisable to let the old fighting line fall back, and form up in reserve of a new one, composed of troops who have been less seriously engaged.

General Skobeleff is credited with having said that every army is composed of three classes of men, viz., the very brave, the moderately brave, and the cowards. It is a question which class causes a commander most trouble, the recklessly brave soldiers, or the cowards. What he has to consider is the normal amount of endurance of an average man. Strict discipline is the best safeguard against man's inherent fear of death; hence the necessity of enforcing what the Prussians call "fire discipline."

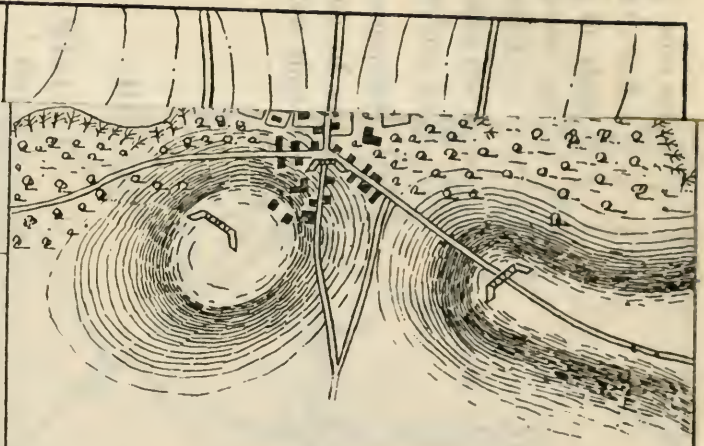
Bridges and Fords.

Unless surprised or turned, to attempt to force the passage of a bridge or a ford in the presence of an



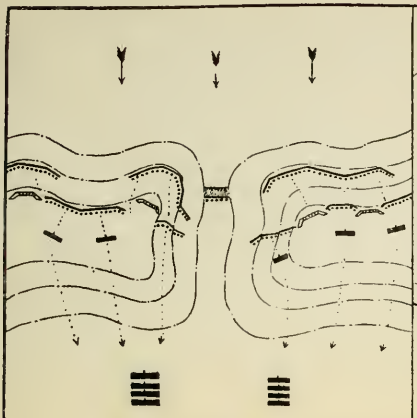
Defence
of a bridge cover on the enemys side.

Fig 3.



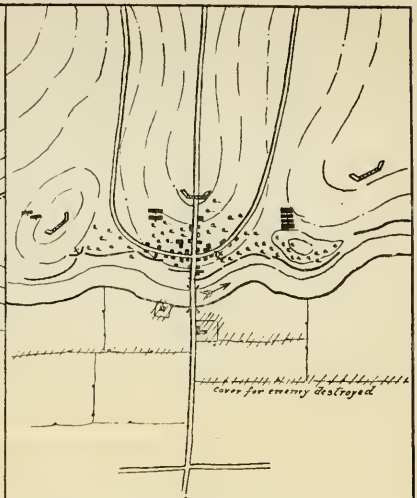
Defence
of a bridge cover on both sides of river.

Fig 4.



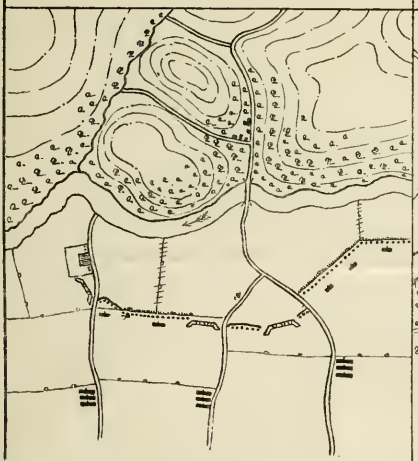
Defence
of a mountain defile with flanks acces sible.

Fig 1.



Defence
of a bridge with cover on the defenders side.

Fig 2.



Defence
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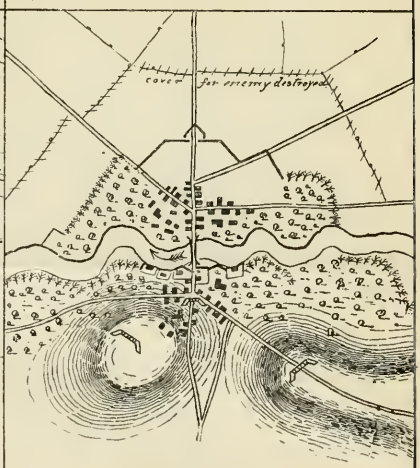
Fig 3.



Defence
of a bridge cover on both sides of river.

Fig 4.

enemy who still commands the passage with his guns in position, and his infantry entrenched or provided with cover, in these days of improved fire-arms is such a dangerous operation as to be practically almost an impossibility. It is now considered absolutely necessary to subdue the enemy's fire before a bridge or a ford can be attacked by infantry.

Accomplishing the passage of a river in retreat in presence of an enemy is, perhaps, the most difficult operation that an army can be called upon to attempt.

Test Questions.

Rivers and Defiles.

I. What are the limits of depth passable in a ford for the three arms? Which would you rather attempt to force, a bridge or a ford? and when would you consider it rash and attended with almost insurmountable difficulty?

II. What is the most advantageous position for the defence of a bridge?

(*a*) Supposing no cover to exist on the enemy's side.

(*b*) Supposing cover to exist on both sides.

(*c*) Supposing cover to exist on the enemy's side only.

III. What are the three different positions from which a defile may be defended? Which is usually the best and strongest position to take up?

PLATE XVII.

enemy who still commands the passage with his guns in position, and his infantry entrenched or provided with cover, in these days of improved fire-arms is such a dangerous operation as to be practically almost an impossibility. It is now considered absolutely necessary to subdue the enemy's fire before a bridge or a ford can be attacked by infantry.

Accomplishing the passage of a river in retreat in presence of an enemy is, perhaps, the most difficult operation that an army can be called upon to attempt.

Test Questions.

Rivers and Defiles.

I. What are the limits of depth passable in a ford for the three arms? Which would you rather attempt to force, a bridge or a ford? and when would you consider it rash and attended with almost insurmountable difficulty?

II. What is the most advantageous position for the defence of a bridge?

(*a*) Supposing no cover to exist on the enemy's side.

(*b*) Supposing cover to exist on both sides.

(*c*) Supposing cover to exist on the enemy's side only.

III. What are the three different positions from which a defile may be defended? Which is usually the best and strongest position to take up?

IV. Under what circumstances may it be best not to oppose the passage of an enemy across a river? And when the defenders make up their minds to do this, what is the proper course to adopt to check the enemy?

V. Define a defile in the military sense of the word. State broadly the principal features of defiles.

VI. When an obstacle with passages over it (such as a stream, canal, railway cutting, &c.) is found running parallel and tolerably close to a line of outposts, how should such an obstacle be guarded? Show how you would post your piquets and supports.

VII. An army is obliged to retire through a mountain defile when an enemy is in pursuit. State in general terms the principles on which such an operation should be conducted.

VIII. Why should a commander, before attempting to throw a bridge over a river, look out for—

(*a*) Cover on the enemy's side.

(*b*) A bend of the river towards him.

(*c*) A tributary stream?

IX. Are rivers considered formidable barriers or not? State reasons. When is a river line most favourable for the defenders, supposing them to have decided not to oppose the actual passage?

X. Explain the terms *passive* and *active* defence as applied to rivers.

XI. The locality fixed, what tactical considerations should determine the point of crossing a river, supposing the river itself, as regards depth and width, to be about the same for some distance?

XII. What are the circumstances which materially assist a defender to concentrate his forces with sufficient rapidity to dispute the passage of a river?

XIII. Why is a rallying point on the opposite bank, when crossing a river, of such extreme importance? and why should principal and secondary crossings be combined?

XIV. What *rôle* is played by the artillery of an army in—

(*a*) Crossing a river in the presence of an enemy?

(*b*) Opposing an attempt to cross?

XV. How should a force of all arms, pass a defile in the presence of an enemy?

CHAPTER XV.

Woods.

WOODS, like villages, are common and important features on most battle fields, and are often the scenes of desperate encounters. Their tactical importance fixed, woods, when to be held, should invariably be defended from their outer edges. The heart of the defence of a wood lies in its outside edge. Before placing a wood into a state of defence it should be carefully reconnoitred, and the following points noted:—

I. Its breadth, depth, shape, and open spaces.

II. Roads, paths, streams, ravines, and their direction.

III. Cover outside or undulations of ground that would shelter or conceal an attacking line.

IV. Flank defence afforded from other parts of a position occupied, and to what extent troops detached to hold a wood can be supported.

V. To defend a wood, 2 men per yard of its outside or exposed edges should be considered sufficient, including supports and reserves.

The Defence of a Wood.

I. Cut down brushwood or trees round outer edge, and throw up trenches behind the *entanglement* thus improvised, taking care that the entanglement does not impede the view of the firing line. *Trenches*, owing to the roots of trees near the surface, are often difficult

to dig, in which case, small trees may be cut down and laid across the openings between the larger ones, to form a barricade. The *Salients* are especially vulnerable, and should be first attended to, and afterwards the re-entering angles.

II. Place guns behind epaulements or where they can command the whole of the approaches. When introduced into the wood their lines of retreat must be amply provided for, so that the guns must be placed near the roads. The best place for them is, therefore, often outside the wood, not in front, but on its flanks.

III. As the heart of the defence of a wood lies in its outer edge, supports and reserves should be posted so as to be quickly pushed into the fighting line.

IV. Roads leading from the enemy, if not required by the defenders, should be cut up; but, if wanted to issue by, defend them near the entrance by lunettes (open works forming a salient angle with short flanks) or barricades placed across them rather in front of the wood.

V. If a road, stream, or ravine happens to run through the wood more or less parallel to the outer edge, a second line of defence is sometimes formed along its rear side. But in this case a separate garrison should be provided, as men on the run, especially in the hopeless confusion of a retirement through a wood in contact with a pursuing enemy, are hardly to be depended on. As a general rule, when a second line of defence

is decided upon, the first line should be directed to fall back to an entrenched position about 500 yards in rear of the wood, there to be rallied and held ready to protect the withdrawal of the second line, or to go forward to its assistance, if the enemy has been seriously checked by it. In this manner a wood may sometimes be recaptured, but, as a rule, next to its outer edge, the best line of defence is a line of entrenchments lying about 500 yards in rear of the wood.

VI. If the wood is isolated, the reserves should always hold an entrenched position in rear of it, to cover the withdrawal of the defenders. If held in connection with a position, every available man should be near its outer edge.

VII. The withdrawal of troops through a wood is always a difficult operation, and communications are of the greatest importance; they should, therefore, be clearly marked out. A wood, if at all extensive, should be divided into sections for defence, with non-commissioned officers posted at intervals to tell men of their own battalions, or brigades, in what direction they are to pass; otherwise, in retiring, the utmost confusion is almost certain to reign.

In Plate XVIII. we see the principles generally laid down for the defence of a wood carried into practice. The outer edges, both of front and flanks. have been entangled and entrenched. Behind this shelter the firing line is extended with their supports close in rear and their reserves at no great distance.

The guns are placed in this case not outside the wood, but behind the entanglement. They are, however, so placed that their fire will sweep the main approaches. At the same time they are favourably disposed for retirement. The shape of the wood is such that its outer edge nearest the enemy forms three salients. The defence is thus naturally divided into three sections. One road leading from the enemy is cut up, the other is left open, except for a barricade.

A road running parallel to the front through the wood is defended at both ends by lunettes which are garrisoned, as it forms a natural "second line" of defence. In rear of the wood a line of entrenchments has been prepared for the "first line" to retire to, and from whence they can, after being rallied, either re-inforce the "second line" or cover its retreat. The defenders have no cavalry, but if they had it would be best placed in rear of the wood on the flanks. It will be observed that the lines of retreat are all clearly marked out.

Attack on a Wood.

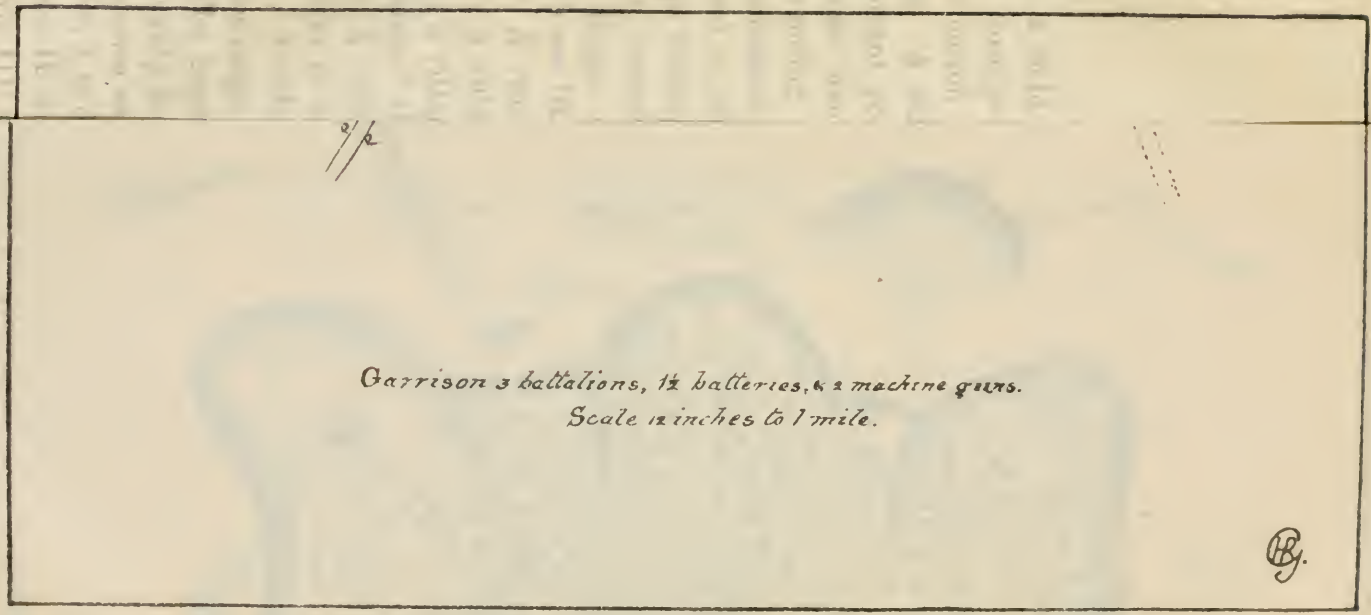
Like all other attacks, that on a wood should commence by a heavy cannonade, with a view to silencing the enemy's guns. The artillery fire should then be concentrated on two or more salients which it has been determined to carry by assault. Guns should also keep the defenders generally employed all along their front, and especially on the flanks, if they can be reached. Of course, the effect produced by this artillery fire will depend greatly on the number of guns that can be brought into action. Supposing the assailants to have plenty of guns, they ought, by firing at different ranges, to endeavour to keep the salients about to be assaulted entirely denuded of defenders for

a distance of about 100 yards. While the artillery bombardment is proceeding, the infantry should be formed for attack. If possible, the infantry attacks should be delivered obliquely, so as not to cloud the fire of the guns. As soon as the infantry get within about 500 yards they should open a hot fire. Under cover of the distraction caused by this sudden fusilade, a portion of the guns should be rapidly moved forward, and brought into action at the closest possible range. The infantry should then make a determined dash at the wood, supported by a tremendous fire from all the guns.

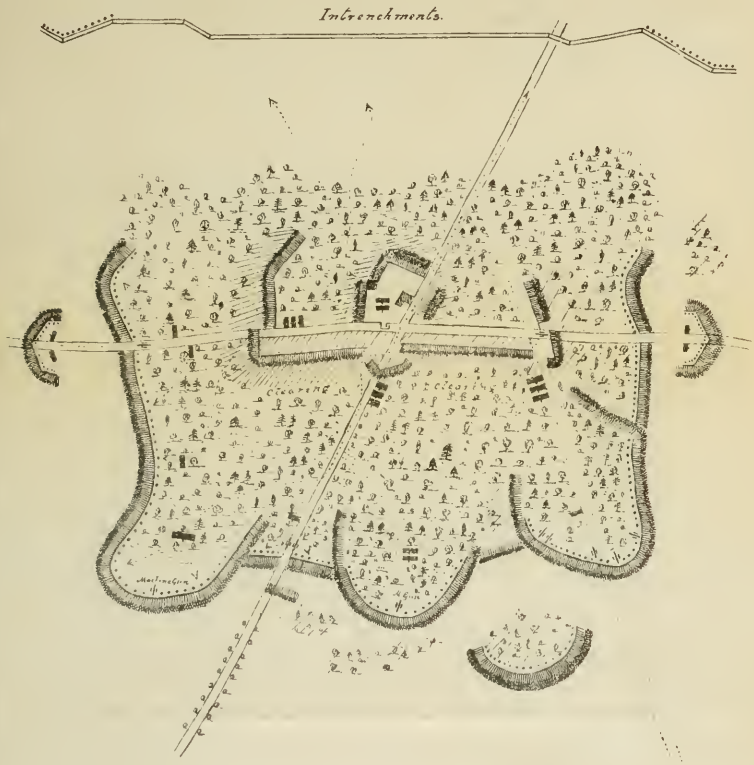
The best formation in which to carry a wood is that of successive waves of skirmishers pressed on one after the other until a footing has been gained somewhere. The reserves should then be poured in as fast as they can be got up, and the defenders pressed back through the wood until the further edge is reached, or a second line of defence has to be carried. This is seldom a serious undertaking if the defenders of the first line are vigorously followed up, as their presence, to a great extent, masks the fire of the second line.

The moment the infantry gain a footing the guns should gallop up, going round the flanks if they can; if they cannot get round, some light guns should follow the infantry through the wood, with a view to being up to aid them by their fire to hold the far edge against the counter-attack which may be anticipated.

As the assailants attacking a wood have generally to cross the open, and usually suffer heavily from the fire of an invisible enemy of unknown strength, a repulse is very discouraging, and the most strenuous efforts must be made to prevent the men halting to fire, and to lead them forward at all hazards.



DEFENCE OF A WOOD HELD IN FRONT OF A POSITION.



Garrison 3 battalions, 1½ batteries, & 2 machine guns.
Scale 12 inches to 1 mile.

DEFENCE OF A WOOD HELD IN FRONT OF A POSITION.

CHAPTER XVI.

Villages.

ON a field of battle, one or more villages usually form prominent tactical points, for the possession or retention of which the most strenuous efforts are made. A village is often situated at the junction of important roads, and is then of the first importance. Villages, hamlets, farms, or large mansions, with their surrounding out-houses, all come under the same classification, though their tactical importance will depend on their situation, and on the extent to which troops holding them can be supported.

In connection with a position there are five kinds of villages, or groups of buildings, one or more of which are likely to be met with.

1. A village on a flank.

2. A village in or about the centre of a position.

3. A village in front, within artillery range of other portions of the position.

4. A village in front, beyond artillery range, but still too near to be disregarded.

5. A village behind a position, or on a line of retreat within range of it.

The general outline of the *exterior* defence for each is roughly indicated in Plate XIX., where five villages are shown as held in connection with a position.

No. I. is defended in front and on its exposed flanks.

No. II. in front and on both flanks.

No. III. same as No. II.

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No. I. is defended in front and on its exposed flanks.

No. II. in front and on both flanks.

No. III. same as No. II.

No. IV. all round, and provided with a strong reduit or citadel.

No. V. in front and on flanks.

Without seeing a position it is impossible to say which of its features is the most important; but a village, unless it can be held in connection with the rest of a position, ought rarely to be occupied, as it is pretty certain not to be attacked unless its possession is essential to the assailants. No unnecessary sieges is a maxim of strategy: no unnecessary assaults is equally applicable to tactics.

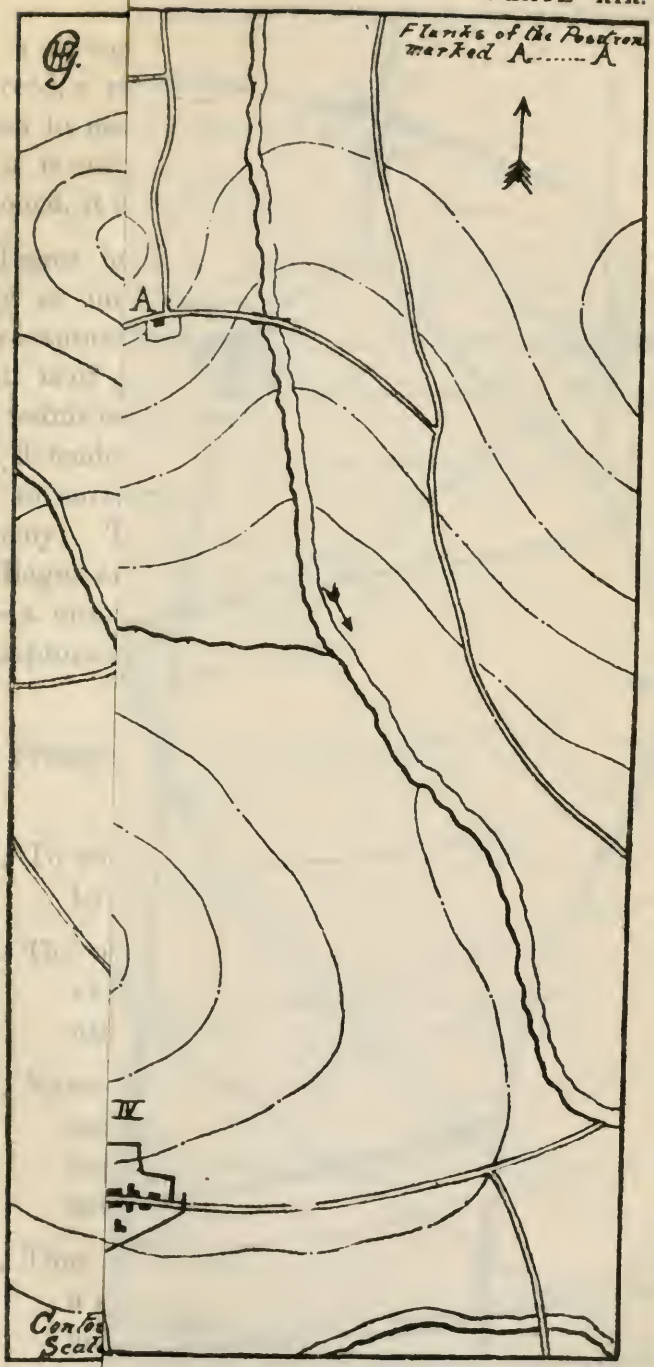
The defence of villages comes under the head of field fortifications rather than tactics; but it is difficult, if not impossible, to draw a line between field fortifications and tactics in these days of hasty field redoubts and entrenchments in connection with modern battle-fields.

Villages may conveniently be divided into two classes for the purposes of the tactician:—

1. Villages held in connection with a position or a line of investment.
2. Isolated villages.

Isolated Villages are extemporized forts, and, with time and labour available, can be made capable of great resistance. They are generally utilized for depôts on a long line of communications, and should, as a rule, be selected in preference to small towns, the civil population of the latter being a source of anxiety and trouble. Again, isolated villages are often held at the exit or entrance to mountain passes, or where they command the approach to a bridge or ford over a river.

The only difference between the defence of an isolated village and one held in connection with a position is, that *the former is generally prepared for defence all round.*


Flanks of the Position marked A.....A
A
IV
Contour Scale

FIVE CLASSES OF VILLAGES IN CONNECTION WITH A POSITION.

If a village is to be held to the last, or until reinforced, a reduit or keep must be prepared for the garrison to make their last stand in. If, on the other hand, it is only to be held for a certain time, and then abandoned, it is useless to prepare a keep.

Villages held in connection with a position are usually so important that, if carried by the enemy their recapture will often be necessary, in which case a reduit is of great importance. The garrison told off to the reduit must be kept quite separate from the rest of the defenders. They must shut themselves up, and refuse to surrender, even when the village is full of the enemy. Their general will then retain a hold on the village, and the enemy will have a foe in their midst—a circumstance which will materially assist in the recapture of the village.

Four Principal Considerations which Influence the Defence of a Village.

I. To what extent it commands, or is commanded by, the surrounding country.

II. The nature of the obstacles in its immediate vicinity, and to what extent they can be utilized in the exterior line of defence.

III. Nature and construction of houses, width of streets, and situation of strong buildings capable of being grouped together or formed into a keep.

IV. Time and means available for putting it into a satisfactory state of defence, and number and description of troops for defending it with.

If a village is to be held to the last, or until reinforced, a reduit or keep must be prepared for the garrison to make their last stand in. If, on the other hand, it is only to be held for a certain time, and then abandoned, it is useless to prepare a keep.

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Steps in Defending a Village.

I. Establish exterior line of works.
   (*a*) To prevent surprise.
   (*b*) To occupy during the artillery bombardment.

This zone of defence should not, as a rule, be more than 120 yards or less than 40 yards from the outer edge of a village. If more than 120 yards it would require too large a garrison to defend it; if, on the other hand, less than 40, the village might be surprised and rushed in the dark, and the shells directed against it would injure the defenders occupying outer zone.

II. Establish interior zone of defence by connecting houses, garden walls, &c., on the outskirts of the village, and loop-holing them.

III. If the village is fortified all round, or to be defended to the last, establish a reduit or keep in some strong building, situated in a commanding position, the junction of several roads, for instance.

IV. Clear the front of exterior zone of all cover for enemy, and also the space between the exterior and interior zones of defence.

V. Divide the village, if large, into sections for defence, and mark out clearly the lines of retreat.

VI. Post the garrison on the principle that, after enough men have been detailed to defend the exterior zone the rest should, after detailing a separate garrison for the keep (if there is one), be held in readiness to occupy the interior zone. Two men per yard of exterior zone, including supports

and reserves, is a good proportion of troops. If, after providing for the outer zone of defence, there are not sufficient troops to garrison the inner zone, the outer line must be prepared to fall back and defend the village, otherwise they should be instructed to fall back round the flanks of the inner zone or through openings specially provided for them and form up in rear, whence they can, if necessary, be again led forward. If there are enough troops it is always advisable to keep the defenders of the two zones separate.

VII. The best place for guns, provided they command the approaches, is on the flanks, outside the village, in which case they must be provided with epaulements and cover for the waggons and teams. When not on the flanks, guns may be posted on any commanding ground in the vicinity whence their fire can be brought to bear upon the approaches.

Guns (machine guns excepted) should rarely be placed in interior zone of defence, and when they are should not open fire until the assailants have carried the exterior line, as they attract the concentrated fire of the assailants. Guns should not be placed along the exterior zone for the same reason, and also because they are liable to be captured and turned on the village, and their epaulements would give useful shelter to the enemy.

The Attack on a Village

is generally attended with severe fighting; it should invariably be commenced with the concentrated fire of guns directed on the most vulnerable points.

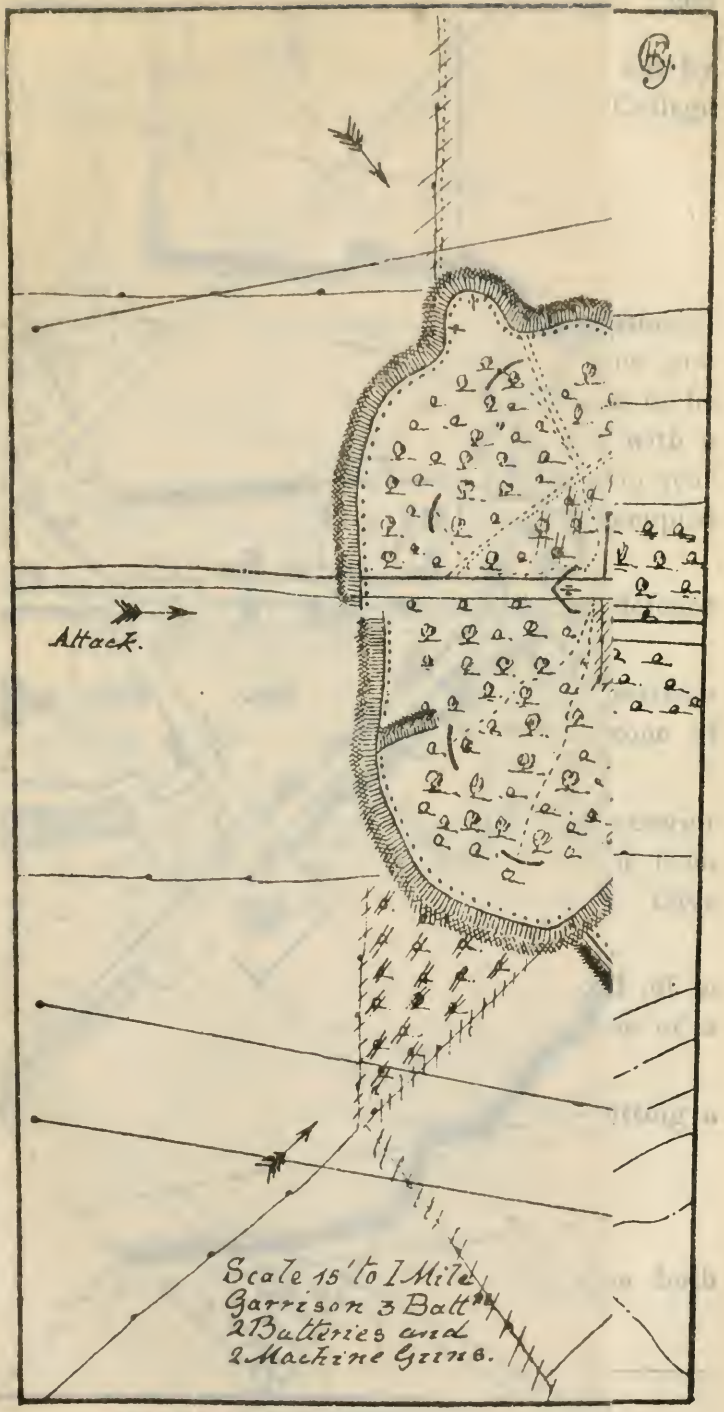
The defenders' guns should be silenced if they show. The assaulting battalions should be simultaneously directed on two or more points, with supports close at hand. Cavalry act as usual, on the flanks. At the moment of closing on the village all three arms should be able to co-operate. Before entering upon the assault the different brigades or battalions should be given general instructions where to rally, and, in the event of the village being carried, preparations should at once be made for putting it into a state of defence against counter-attacks. In all cases the reserves should be kept well in hand, and only introduced as required, a portion being kept back to meet unforeseen emergencies.

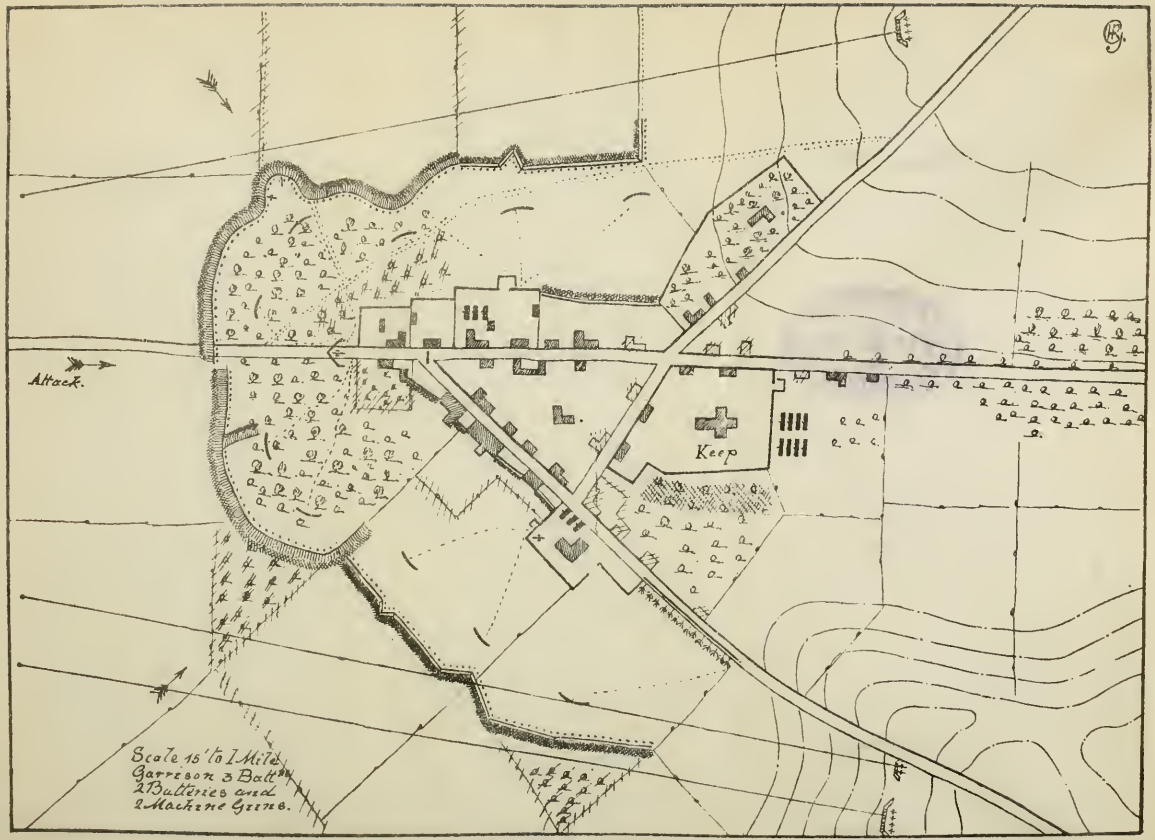
In Plate XX. we see the general principles laid down for the defence of a village carried into practice. Front and flanks fortified by abatis and shelter-trenches, and defended by firing line with supports. This is the exterior zone of defence, about 120 yards distant from the village.

The village itself is fortified by loop-holing walls and buildings, and connecting them when detached. The defenders keep clear of the houses and walls until the attack has developed and the outer defences are in danger of being carried. The guns are placed on the heights in rear of the flanks, from whence they command the main approach and afford flank defence to the outer and inner zones.

The "reduit," or keep, is isolated by knocking down the houses in the immediate vicinity, and the lines of retreat are all clearly indicated for the defenders of the exterior line to retire by.

In further illustration of this subject, I have been furnished by Lieutenant-Colonel Mallock with a scheme for the defence of a village and wood, giving detail of


Attack.
Scale 15 to 1 Mile
Garrison 3 Batt.ns
2 Batteries and
2 Machine Guns.



DEFENCE OF A VILLAGE.

time, labour, etc.* This scheme was worked out by him as one of the practical exercises of the Staff College course.

Test Questions.

VILLAGES AND WOODS.

I. You are directed to put a village in a state of defence. State in general terms how you would proceed, supposing the village to be an average one, held in connection with a position and commanded by heights in rear and on the right, near enough to be occupied by the defenders.

II. When is a reduit essential to the proper defence of a village?

III. What is the normal strength of garrison required to defend the exterior zone of defence of a village?

IV. What is the greatest distance that the exterior zone of defence of a village should be from the interior zone? What the least? Give reasons.

V. What should become of the troops told off to defend the exterior zone of defence of a village when driven back from it?

VI. What difference would you make in putting a village into a state of defence?

(*a*) to hold it to the last?

(*b*) to retard an enemy?

What is of primary importance in both instances?

---

* See Appendix III.

PLATE XX.

PLAN OF A VILLAGE.

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---

* See Appendix III.

VII. Show by a hand-sketch how you would defend the following villages:—

(*a*) a village on the flank of a position
(*b*) „ in the centre „ „
(*c*) „ within artillery range of position
(*d*) „ beyond artillery range of position
(*e*) „ on the line of retreat.

VIII. What are, in your opinion, four of the principal considerations which influence the defence of a village?

IX. State generally how the attack of a village should be conducted? Say why it should be avoided if possible?

X. What are the points to be noted before occupying a wood? Where is the heart of the defence situated?

XI. How long is a wood of advantage to the defenders? What are the weakest points in defending it, and how should they be protected?

XII. What is the disadvantage in wood-fighting common to both sides?

XIII. How would you attack a wood about the centre of a position fully occupied, outer edge offering a front of about a mile and three quarters, with three salient points in addition to the two corners? Describe your dispositions, generally assuming that you have sufficient troops of all arms, and illustrate your answer, if you like, by a hand-sketch.

CHAPTER XVII.

Convoys.

PERHAPS no part of a soldier's work during a campaign of any duration is less genial than convoy duty: it is often dangerous, at all times tedious; and few men during a war deserve better and fare worse than those whose lot it is to keep open the lines of communication.

Land Convoys

are of various descriptions and importance. The introduction of a convoy of ammunition or food into a beleaguered city may be covered by a series of movements ranking amongst the grand operations of war.

History records numerous instances where convoys of sick and wounded, or of women, children, and civilians, carrying with them every description of human wretchedness, have started forth from a partially invested and ill-provisioned town, only to perish miserably or be captured outside. The protection of such a caravan usually entails a serious military operation apart from the actual conduct of the convoy, which, if attacked, cannot be expected to offer any protracted resistance. *The ordinary convoys are those plying between a force in the field and its base.*

If the country remains openly hostile, and the communications are insecure, no precaution should be omitted to protect the waggons or animals from being looted or captured. With this view, an escort composed

of cavalry and infantry is usually provided, and the commander is expected to offer a determined resistance against a serious raid, and secure himself against marauders.

With regard to the conduct of convoys, a few rules have been generally accepted; but their application must vary with the country, the composition of the convoy, and the character and proximity of the enemy. No convoy, whether composed of waggons or pack-animals, or a combination of both, should exceed a mile in length on a road, allowing for the waggons to be stretched out in single file. If there are pack-animals, or beasts driven on the hoof (bullocks, sheep, &c.), they should head the convoy, and have the benefit of the best of the road in wet or dry weather.

Escorts usually consist of one-third cavalry and two-thirds infantry. It is seldom that a convoy travelling alone, with merely its immediate escort, will be expected to repel an attack of the three arms combined; thus guns have rarely accompanied a convoy, although in future Gatling or machine guns will doubtless more frequently be added.

A long line of waggons or pack-animals is an unwieldy and extremely vulnerable array, and travels slowly in proportion as its length increases. For every reason, therefore, including speed (always an important consideration), whenever the country admits of their moving on a more extended front, the waggons, &c., should be closed up, and the length of the column reduced. A certain percentage of spare waggons, and animals should always be provided in case of break-downs. The first object of the commander is to get to his destination as quickly as possible, and he should endeavour to get on to his new camping-ground early, in order to water his cattle, and park before dark. The loading

and unloading of pack-animals requires time, and should be carefully superintended, or sore backs will soon appear amongst them.

In disposing of his escort a commander will recognize the extreme importance of obtaining the earliest possible information of an intended attack; and for this reason the cavalry should reconnoitre widely to the front and flanks, the infantry being distributed in front and in rear of the convoy, with a strong reserve placed in a central position ready to be moved rapidly in any direction.

Defiles,

at all times dangerous situations for troops on the march, are especially awkward for convoys. In the event of a defile being reached by a convoy before the advanced cavalry have had time to reconnoitre satisfactorily on the flanks and beyond it, with a view to saving as much time as possible, the leading half of the convoy should be halted and parked at the entrance, while the rear half keeps the road and closes up. By the time the second half has reached the passage, the required information may have been obtained, in which case it can push through, preceded and flanked, if possible, by a portion of infantry, which, on reaching the far side, takes up a position to guard the entrance. The formation of the different bodies of troops and the manner of parking the convoy under these circumstances are shown on Plate XXI., Fig. 1.

On debouching on the far side the leading portion of the convoy should halt and park, while the remainder passes through and regains its position at the head, when the procession proceeds in its original order.

This arrangement, besides saving time, has the advantage of keeping the bulk of the escort concentrated and close at hand, to protect the passage of the waggons, &c. (*Vide* Plate XXI., Fig. 1).

There only remains to describe the different methods of parking.

Parking Cattle.

Soldiers, as a rule, are considerate to dumb animals and soon get to understand their ways.

Cattle, whether sheep or oxen, after a long tramp will seldom stray far; provided the last-mentioned have been watered, a stray beast will usually find its companions if left alone.

If unmolested and left alone cattle, as a rule, quietly settle down for the night.

Horses, ponies, and mules should be piqueted in rows, facing each other, with plenty of room to walk between for feeding purposes.

Camels rarely roam at night, and, when once down, never stir till morning.

Animals of all descriptions, like men, are more easily led than driven.

Elephants are peculiar, and will only obey their own keepers.

Five Methods of Parking Waggons.

1. At ordinary halts when no attacks are contemplated (*Vide* Plate XXI., Fig. 2).

2. When a sudden attack is imminent on the march, and there is not time to make a regular park (*Vide* Plate XXI., Fig. 3).

3. Parking in an oval or circle, axle to axle (*Vide* Plate XXI., Fig. 4).

4. Parking end-on in square formations; advantage, more interior space than in No. 3 (*Vide* Plate XXI., Fig. 5).

5. Parking in echelon formations (*Vide* Plate XXI., Fig. 7).

If a convoy consists of explosives, the waggons should be parked separately, and the escort divided and posted so as to afford flank protection (*Vide* Plate XXI., Fig. 6).

Convoys by Rail.

A convoy by rail is simply a train, and embarkation and disembarkation is the chief difficulty, for which suitable platforms must be provided.

A pilot engine, armour-plated, should be provided, and the escort distributed between head, tail, and centre of train.

By Water.

A convoy by water is conducted on the same principles as on land.

Cavalry must be kept well in advance and on the exposed flank. Infantry in separate boats move at head, centre, and tail, and are only landed when an ambush is possible, or an enemy reported.

If attack imminent, the infantry must be landed, and their boats kept close at hand for retiring to.

The loaded boats meanwhile should be moving along the opposite side, with arrangements complete for sinking them if in immediate danger of being captured.

Test Questions.

CONVOYS.

I. What general rule regulates the strength of a convoy, and what is the rule as to the order of march of the waggons?

II. How would the escort be distributed supposing it to be composed of infantry and cavalry? What troops should furnish the advanced-guard, and why is reconnoitring so essential?

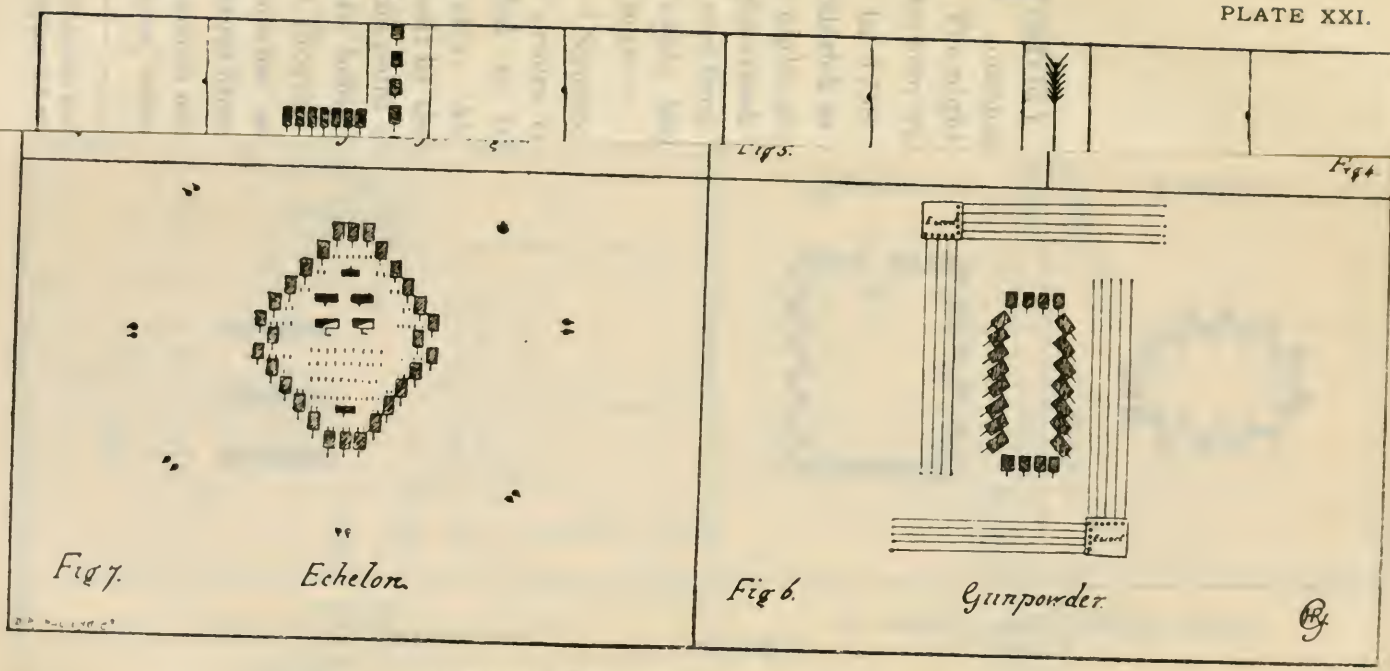
III. What is the rule as to halts—(*a*) temporary halts; (*b*) halting for the night; (*c*) when the convoy is of gunpowder?

IV. What are the most vulnerable parts of a convoy, and what dispositions should be made to protect them?

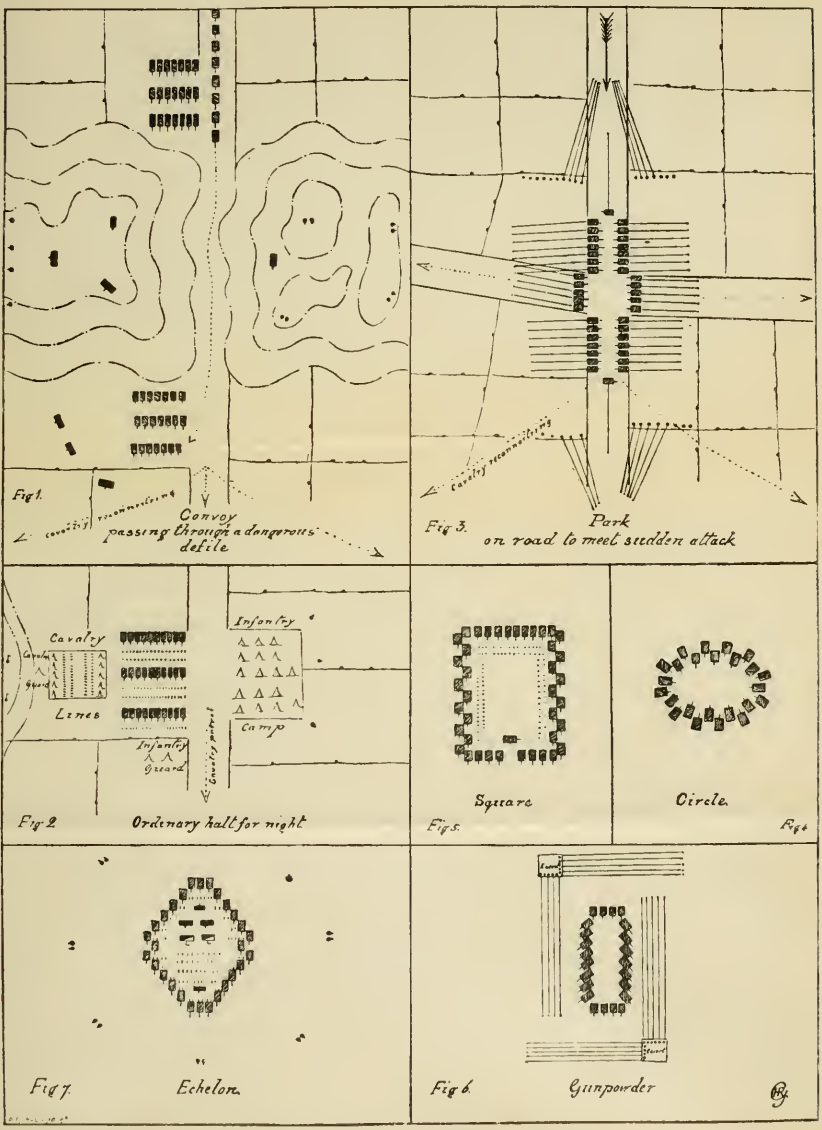
V. Describe how you would get through a defile with a convoy, supposing the enemy to be in the vicinity.

VI. How is a convoy of boats conducted?

VII. What positions would you select for the attack of a convoy? and what is the best combination of troops for the purpose in an average open country?



DIFFERENT METHODS OF PARKING CONVOYS.



DIFFERENT METHODS OF PARKING CONVOYS.

CHAPTER XVIII.

NIGHT ATTACKS.*

HISTORY affords numerous instances of *night* marches, but very few of successful *night attacks.*

The night attack by the Russians on the English at Inkerman was repulsed.

In 1758 the Austrians, under Daun, surprised Frederick at Hochkirch, by closing round him during the night, and in 1814 Marmont made a most successful night attack on the Russians at Étoges. The following extract from Marshal Marmont's memoirs furnishes a valuable lesson for the guidance of similar undertakings:—

"Napoleon had placed Grouchy's cavalry under my orders, two thousand five hundred strong; I had added to it all I had in readiness of my own cavalry. At the same time, I ordered him to make a circuit by the plain to our left, to anticipate the enemy at his point of retreat, and to place himself in order of battle behind him astride of the road of Chaumpaubert and Étoges. This movement was carried out, though somewhat tardily. Ourousoff's division received the charges directed against it with courage, and continued its march and forced its way through in order to get to Étoges, where it halted. This last action took place at

* Of course, any reference to night-assaults during siege operations would be out of place in a work of this description.

PLATE XXI.

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sundown. When we arrived at Chaumpaubert, the Emperor sent me an order to halt there; but nothing could have been worse conceived. We could not leave the enemy at such a short distance from us. Besides, Chaumpaubert is not a good defensive position, and that of Étoges, a bad one for the enemy, was an excellent one for us. I was evidently to be abandoned here with a handful of troops, and it was wise to clear it of the enemy before weakening myself. I decided therefore to march on Étoges and make a night attack with a view to taking it by surprise. Similar attempts after a first success ought to be made oftener in warfare; they would always be successful. But my troops having fought alone all day, all my men had been engaged; I had not three hundred men together. I asked Marshal Ney to lend me one of his regiments of the Spanish division, commanded by General Leval, who was following me. He refused my request. Feeling the urgency of the case, I gave a direct order to a regiment of this division of eight or nine hundred men to follow me. I placed it in column on the road, and ordered it to protect itself by fifty men skirmishing a hundred paces only to the right and left, to march in this formation without noise, not to fire, and to throw themselves when they got within range, on Étoges without replying to the enemy's fire. As to myself, I marched in person at the tail of this column. What I had foreseen occurred. The enemy, having established themselves for the night, were not on their guard. Surprised, they offered no resistance, and fled. More than three thousand prisoners were made; amongst them was Prince Ourousoff commanding the division."

The advantages of a night attack are :—

1. Saving of time; all preliminary stages of a battle are avoided.

2. Diminution of loss; assailants' movements unseen.

The disadvantages of a night attack are:—

1. All those entailed by a night march.
2. Concentrating troops in the dark is a difficult and dangerous operation.
3. The rate of marching is so slow as to be computed at one mile per hour at night for a battalion moving over a roadless country.

The favourable conditions for a night attack are:—

1. When the opponents are very inferior in discipline, and their outposts are known to be slack.
2. When there happens to be good cover to hide the assailants' movements.

The unfavourable conditions for a night attack are:—

Ignorance of the ground and positions held by the enemy.

The other conditions both for and against are common to all attacks, only intensified.

The following are some of the principal precautions to be observed in undertaking operations at night:—

The commanders of columns should make a personal reconnaissance of the country they are going to move over.

Guides should not be relied on unless they are known to be in the habit of traversing the ground in the dark.

Distances should be carefully timed, not simply measured.

The enemy's outposts should be circumvented if possible, and moving down wind avoided.

The attack should be conducted with as few columns as possible.

Cavalry and guns should be marched in rear of the infantry.

Lateral communications must be kept up between columns at all costs.

Orders.

1. *Object.* 2. *General idea.* 3. Compass or other clear direction, with limits within which attacking columns may advance previous to final advance to assault. 4. Distinctive marks, and watch-word. 5. Halts named for certain hours, not places, and men directed to lie down during these halts. 6. Attitude to be assumed in case of sudden attack by enemy, either in front or on flanks. 7. Instructions for the assault, and the signal for its being delivered. 8. The place of the commander on the march and prior to the assault.

All these orders, and any others that peculiar circumstances suggest, should be clearly explained to everyone before the troops are marched off. No loading without orders, no stopping to help wounded men, no halting till the position is reached. When checked by obstacles, the men not employed in helping to remove them to lie down. Each section must look to its own commander to lead it; but if there is the least sign of hesitation, officers and non-commissioned officers must at once lead forward any men near them with the bayonet, until the enemy is driven out of the works.

Formation of a Column.

Advanced guard preceded by a "point" 100 to 200 yards. Pioneers with advanced guard. Attacking columns at from 50 to 100 yards from advanced guard,

in column of companies, half-companies, sections of fours, with three paces between ranks or fours, at half-open files.

Support at from 200 to 400 yards in rear of attacking column.

Gun detachments with supports ready to serve enemy's guns when captured, or spike them if necessary. Engineers also with support.

Reserve half a mile in rear, and behind it the artillery, the reserve ammunition, entrenching tools, and the cavalry.

When closing on enemy's position, all the above distances may be diminished to one-half.

Water bottles should be filled, great coats taken.

Frequent and short halts made.

Cavalry and horse artillery must not run the risk of coming in contact with enemy until daybreak.

If attack has succeeded, they should endeavour to get round the flanks of retreating enemy.

If attack has failed, must protect retreating infantry by falling on the flanks of pursuers.

The Assault.

Officers must lead.

Supports within 300 yards of assaulting columns ready to move forward in case of success, or to cover retreat if assaulting column is driven back.

Troops repulsed should endeavour to fall back clear of flanks of supports.

Reserve will follow supports at a distance of about half a mile, and await orders by signal or otherwise.

The reserve occupies a captured position, the attacking column and support taking up the pursuit.

Cavalry and mounted infantry pushing up parallel roads to the enemy's line of retreat, and keeping clear of all encounters with him till daybreak.

Pursuits should always be vigorous.

Troops falling back must be rallied by the commanders of the support or the reserve, as may be ordered by the officer in command.

It will thus be seen that none but highly disciplined troops should risk an undertaking fraught with so much danger as that inseparable from a night attack, although in future night attacks may have to be resorted to as the only means of approaching a strongly defended position.

The Defence.

Vigilant and well trained troops, prepared to fight at close quarters, ought not to fear a night attack. On calm nights the movements of troops can be heard a long way off. Unless expressly ordered to make a stand, outposts, after giving warning of the enemy's approach, should fall back as noiselessly as possible. Telephonic communication should be established between outposts and the main body they are covering. When an enemy approaches a line of obstacles at night, fire or light-balls should be thrown behind him. The artillery will open fire with canister, and the machine guns will fire, and the infantry deliver volleys fired low, and if the enemy is not repulsed, the defenders should continue fighting till daybreak if possible.

Test Questions.

Night Attacks.

I. State what the advantages and disadvantages of a night attack are.

II. When is a night attack admissible ?

III. State some of the principal precautions to be observed in undertaking operations at night.

IV. Give the formation of a column consisting of a brigade of infantry, one regiment of cavalry, one battery of artillery, and a company of engineers during the march to a night attack.

V. What is the *rôle* played by the assailant's artillery and cavalry during night operations.

VI. How should the defenders' outposts act on the approach of attacking columns at night.

VII. Supposing a night attack to be successful, what troops should pursue until daybreak?

CHAPTER XIX.

Military Map Reading and Placing Troops on a Map.

PLACING troops on a map, and reporting on the features of country as depicted on a map, form an important part of the training of officers, and lately this method of testing the military student's knowledge of the art of handling troops has been somewhat extensively adopted by examiners. In these days of long range artillery fire, wide turning movements and skilful combinations of troops advancing from different directions, and wide developments of front from deep columns; any scheme which involves placing a considerable body of troops on a map of very limited area, can hardly be considered a practical test, as a comprehensive knowledge of the surrounding country for several miles in all directions is a fundamental principle of modern tactics. Clearly therefore the ground represented on a map should be extensive, or the force employed must be proportionately small.

In order to make a practical use of a military map, it is not absolutely necessary to be able to make one; and it is to help those students of tactics who have not had the leisure or the opportunity to acquire a knowledge of military surveying, that the following notes on the most essential points in map-reading have been compiled.

Military Contoured Maps.

Measurement of Distances.

The distances shown between different points are horizontal distances. When the ground is undulating or hilly, the distance between any two points, measured along the surface, is greater than if the ground is level, and this distance is allowed for in all good maps.

Scales.

All maps are drawn to scale; that is, a certain distance on the ground is represented by a proportionate distance on the map.

Conventional Signs.

For military purposes a code of conventional signs is used to indicate certain objects; such as roads, bridges, walls, woods, hedges, embankments, cuttings, etc.

Features of Ground.

A hill is elevated ground from which the ground falls in all four directions.

When the ground falls in three directions and rises in one, we are on the "water-shed" of a ridge or spur.

If it rises in three and falls in one, we are in the "water-course" of a valley.

If it rises and falls in alternate directions we are on a "saddle."

The sides of hills either jut out or recede inwards, and are called "salients and "re-entrants" respectively.

The salients are the "spurs," the re-entrants are the "valleys." (*Vide* Plate XXII.)

A very simple and easy method of illustrating the above features of country is to take two flower-pots of different sizes, fill them loosely with stiff earth and

turn them upside down as close to each other as you can hold them; then remove the pots, and the shapes taken by the earth will represent a very fair model of hilly country. Next, gently trickle some water on the top of each of the mounds of earth; the valleys will be represented by the course the water takes, and the spurs or water-sheds will remain dry, while a saddle will probably connect the two mounds of earth.

The terms plateau, ridge, knoll, pass, valley, ravine, undulating ground, are familiar to all.

Representation of Hilly Ground.

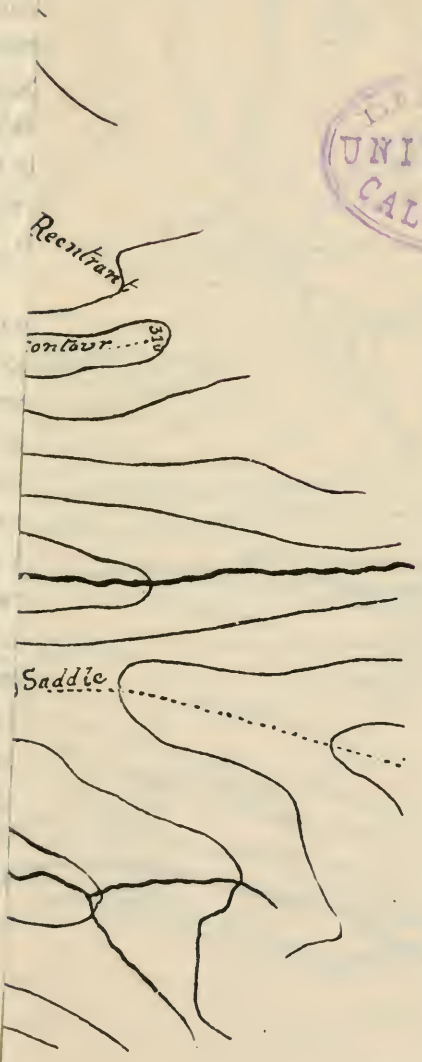
In military maps the general shape of the ground is represented by "contours."

A contour is an imaginary line drawn along the surface of the ground, following its shape and keeping on the same level throughout its whole length. A contour must either close on itself, when it indicates an isolated hill, or continue to follow an eccentric but unbroken course till it runs off the map. For the sake of clearness contours are generally drawn in red ink.

Steepness of Slopes.

The steeper the slope the closer the contours are together; but although their "horizontal" distances vary according to the steepness of the slopes between them, contours are all drawn at equal "vertical" intervals one above the other, and if we know what this interval is on a map, we can find the height of any point, or the relative height of any two points, by counting the contours, provided we are able to distinguish whether any contour is higher or lower than the next one.

In military maps the heights represented by the different contours are usually numbered (they ought



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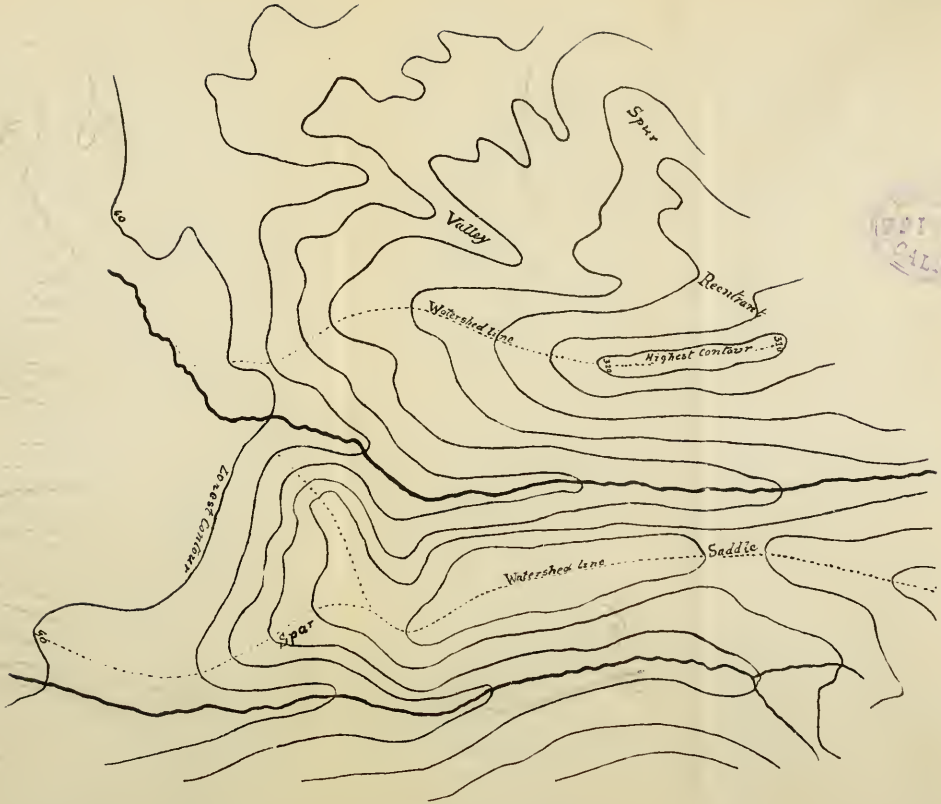

FEATURES OF GROUND ILLUSTRATED.

always to be). When this is the case, there can be little difficulty in finding the highest point, or in comparing one height with another. If the contours are not figured it is sometimes difficult, unless water is represented on the map; we then know at once that the contour nearest the water is lower than the next, and if we follow the contours up we know that the ground is rising until we cross the same contour twice, which means that a fall has commenced, and this means that we have crossed a water-shed line.

If rivers or streams appear on a map there is no difficulty in distinguishing *water-courses* from *water-sheds.*

Again, rivers cannot run up-hill, and they run out of the bends of contours, not into them.

In most maps the direction in which rivers run is indicated by an arrow.

When a contour closes on itself, it either means the top of a hill or knoll, or there are other contours within it which also close on themselves, and the smallest or inner of these indicates the top of the hill or knoll; and again, when maps are shaded in mezzotint the hill-tops are left unshaded, and the *water-sheds* are shaded lighter than *water-courses* parallel to them.

The accepted rule is that for military maps at 6 inches to the mile, the "vertical" interval between contours is 20 feet.

At 3 inches to the mile, as the space is smaller, for the sake of clearness, 40 feet is the usual vertical interval.

Gradients

are expressed in two ways, either by the number of degrees in the angle which the slope makes with a horizontal line, or by the proportion between the height

Forest College

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Gradients

are expressed in two ways, either by the number of degrees in the angle which the slope makes with a horizontal line, or by the proportion between the height

and base of the slope put in the form of a fraction of which the height is the numerator, and the base the denominator; thus, supposing the distance between two contours on a 3-inch scale map to be 400 yards the slope or gradient will be $\frac{40}{400 \times 3} = \frac{1}{30}$ or a rise of 1 foot in every 30 feet.

The gradients affecting movements of troops are as follows:—

45° or $\frac{1}{1}$ difficult for infantry.
30° or $\frac{1}{2}$ impracticable for cavalry.
15° or $\frac{1}{4}$ impracticable for artillery.
5° or $\frac{1}{12}$ good manœuvring ground for all arms.

Visibility of Points.

In the field the eye at once recognises an obstruction to view, and the observer either advances or retires until he can see over it, or gives up the attempt as hopeless; but when called upon to place bodies of troops on a map, to be able to tell whether one portion of ground can be seen from another portion of ground on that map is necessary. It affects the placing of sentries, shelter trenches, guns, and troops, and it also regulates the all important questions of obtaining the best field for fire, and the best and nearest cover from the enemy's fire, all of which would be at once apparent to the eye of a practised soldier or sportsman in the field.

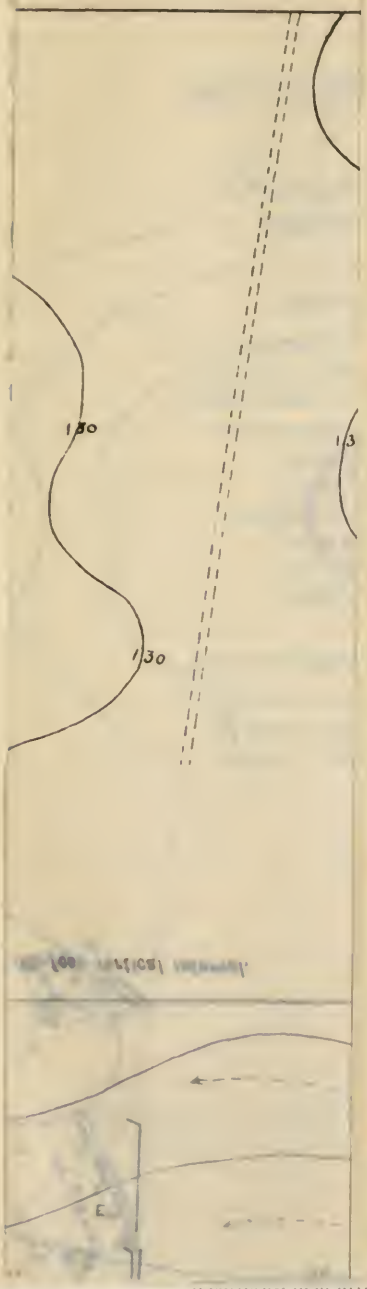
For instance, when there happens to be between the points a long, gentle slope, succeeded by a steep slope, or a considerable intermediate hill or knoll; in either of these cases the probable point of obstruction is obvious, *i.e.*, if there is an obstruction to view, it will either be at the top of the steep slope or the top of the intervening hill or knoll.

OPS ON A MAP.

EGE ENTRANCE EXA

ER XIX.)

R. MALLOCK, P.S.C.



POSITION SELECTED.

(See Map.)

MAIN FEATURES being:

(*a*) Defence in two lines and reserve.

(*b*) Strong occupation of, and forced deployment of enemy by artillery from, hill A.

(*c*) Support of hill A by entrenched battalion at B. A and B supported by infantry and artillery intrenchments at C C C.

(*d*) Refusal of right flank. Protection of that flank by

1st. Cavalry observation.

1 company engineers.

EXAMPLE OF PLACING TROOPS ON A MAP.

ANSWER TO QUESTION 6, FIRST PAPER, STAFF COLLEGE ENTRANCE EXAMINATION, JUNE 1887.

(VIDE APPENDIX I., PAPER XIX.)

BY LIEUTENANT-COLONEL T. J. R. MALLOCK, P.S.C.

PLATE XXIII.

POINTS FOR CONSIDERATION
or
GENERAL OFFICER COMMANDING.

POSITION.

(1) Defensive.

(2) To be held to the last; therefore must be

(a) Strongly held; *i.e.* defence must be concentrated;

(*b*) Flanks made secure; Main counter attack presumably left to troops in rear.

POINTS AS REGARDS GROUND.

(1) Want of relief.

(2) Want of cover.

(3) Slopes suitable for manœuvring all arms.

(4) Ridge **C** alone gives cover for reserves, &c., or covered communication within position.

(5) Knoll **A** hides ground south of it from ridge **C**, and would be a strong *point d'appui* for enemy.

(6) Western slopes favour attack on right.

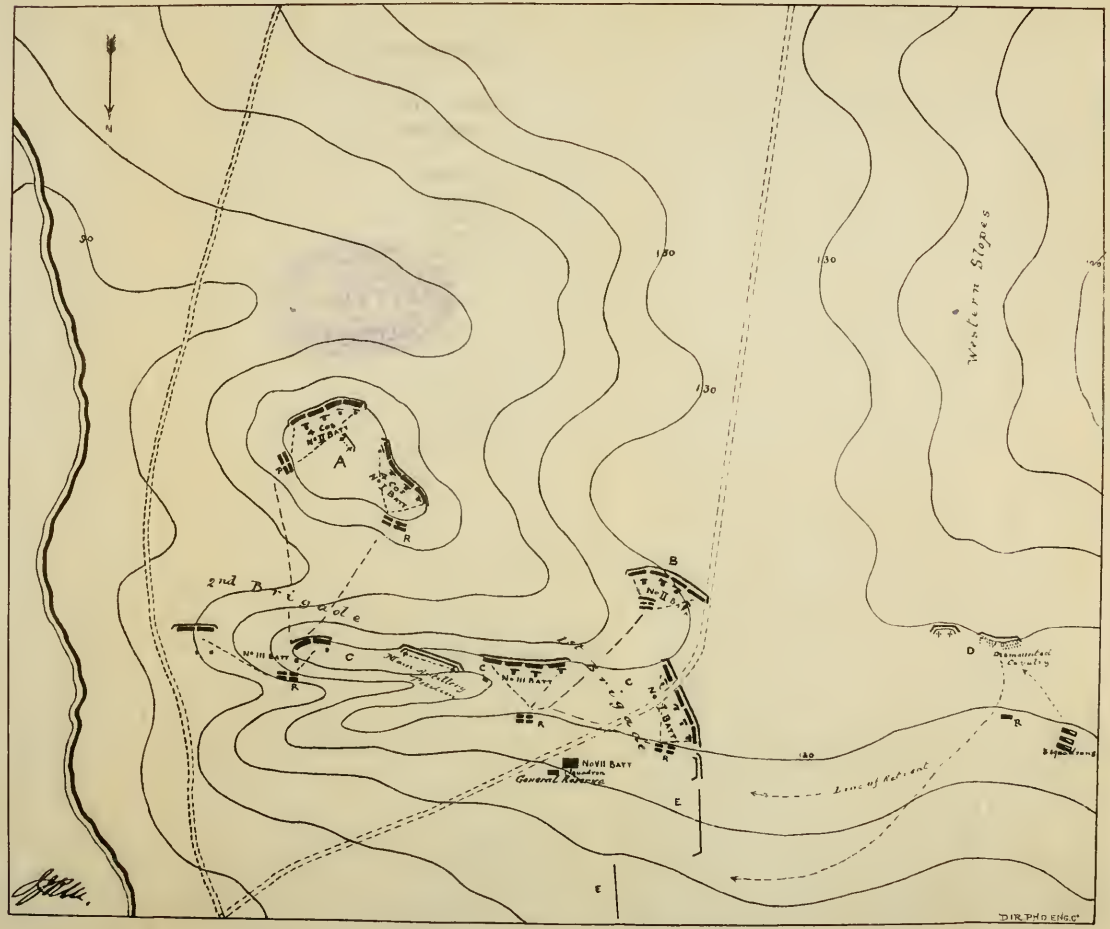
POINTS AFTER EXAMINATION OF GROUND.

(1) Left flank partly secured by river, but attack on this side might drive him off line of retreat.

(2) To include western slopes in main line of defence would be rather to

(*a*) Unduly lengthen line, or

(*b*) Leave gap between self and river.



SCALE—3 inches to 1 mile. Contours at 10 feet vertical interval.

POSITION SELECTED.
(See Map.)

MAIN FEATURES being:

(*a*) Defence in two lines and reserve.

(*b*) Strong occupation of, and forced deployment of enemy by artillery from, hill **A**.

(*c*) Support of hill **A** by entrenched battalion at **B**. **A** and **B** supported by infantry and artillery intrenchments at **C C C**.

(*d*) Refusal of right flank. Protection of that flank by

1st. Cavalry observation.

2nd. Artillery and dismounted cavalry, fire action at **D**, over western slopes.

3rd. Epaulments, and shelter trenches at **E E**.

WORK.

Shelter trenches and epaulments for shooting line, and supports at **A B C D E**.

Epaulments for artillery for one or two batteries at **A**, for three batteries on ridge **C**, for one battery at **D** and **E**.

N.B. — *Slopes of ground favour withdrawal of batteries from* **A**, *if necessary.*

There are various methods of ascertaining whether a point on a contoured map is visible from another point on the same map, which the student, who has not had time to study topography, can make himself acquainted with by referring to any of the numerous hand-books on military sketching.

As before stated, it is not necessary to be able to make a map to make use of one.

If troops are upon the same contour, *i.e.*, on the same level, it does not follow that they must necessarily be able to see each other. If the ground between them rises above the height of a man standing, they would not see each other. It is important, therefore, when posting sentries along a contour, to place them in the salients and not in the re-entrants.

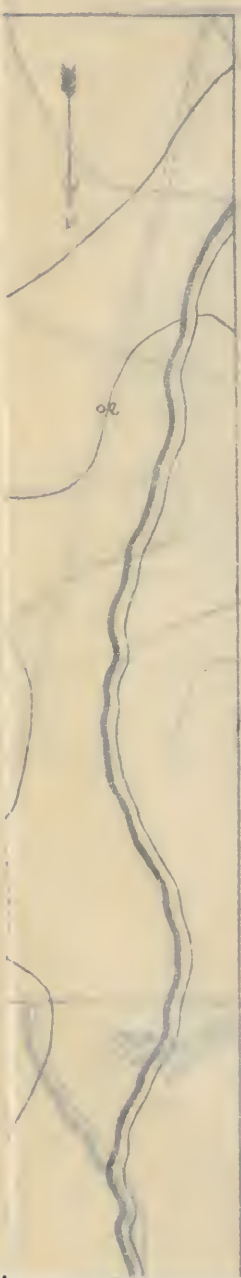
As an abstract example of how to place troops on a map the following question, which was set at an examination for admission to the Staff College, has been worked out with a view to showing how the questions may be answered.

A division of our army, at war strength, is marching southwards. On reaching the junction of the roads (*vide* Plan, Plate XXIII.), its commander is directed to take up a defensive position on the open heights to the west of the river, which is to be held to the last. The enemy is advancing from the south. Time is available for the construction of shelter trenches and gun pits.

Show on the plan the distribution of the force you propose, and give a clear explanation of your scheme of defence.

It is not deemed necessary to throw out outposts.*

* When this question was asked a division consisted of:—
2 brigades of infantry (each 3 battalions).
1 battalion of rifles.
1 regiment of cavalry.
3 batteries field artillery.
1 company engineers.



intervening hill or knoll.

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CHAPTER XX.

The Employment of Cyclist Infantry.

By Eustace Balfour, M.A., Captain, London Scottish R.V.

THE first trials made in this country, on an important scale, of the utility of cyclist-infantry as an arm of our service were carried out in connection with the volunteer manœuvres at Easter, 1887, in the country between Canterbury and Dover. These experiments were necessarily, to a certain extent, irregular. It was obviously impossible, at that stage, for volunteers to go to the expense of uniforms and accoutrements specially suited to cyclist work, or of the necessary attachments to enable them to carry arms, ammunition, and valises on their machines. In fact, at a few weeks' notice, a sufficient number of trained infantry volunteers to make the experiment of any great practical value could not have been obtained. A large number of civilian cyclists were therefore employed; and if ever the development of military cycling reaches such a standard of usefulness as its advocates expect, it ought to be borne in mind that this result will have been reached, to a great extent, through the assistance of men who, without any previous military training, lent a willing and effective aid to those officers of the regular army by whose initiative and energy the whole experiment was brought to a successful issue.

Some continental nations have been before us in using cyclists for military purposes; but their employment does not seem to have extended beyond the conveyance of information and orders.* We have been more ambitious; and it is proposed that cyclist-infantry shall be used, firstly, for the same objects as are attained by a cavalry screen; secondly, for rapidly seizing and holding distant positions of tactical importance; thirdly, for reconnaissance work of all kinds; and fourthly, for the conveyance of information and orders. The capability of cyclist-infantry of performing these duties and some of the methods by which they can be carried out are the questions which will be chiefly discussed in this chapter; but, before entering upon these subjects, it is necessary to remove one or two misconceptions.

There has been an impression that the advocates of cyclist-infantry are attempting to introduce this arm to the exclusion of cavalry and mounted infantry. In reality, that is not in any sense their object. What is required, is that the various kinds of forces which compose the British Army should possess, each in its own way, the proper proportion of men who can perform the four kinds of duties above mentioned. We stand in this position: It may be assumed that the regular army either possesses, or will possess soon, sufficient cavalry, mounted infantry, and horses, to form the necessary proportion of quickly moving troops. It may be also roughly assumed that the

* A recent lecturer in France (M. Hennequin), however, has advanced some stages further. According to the report of his first lecture in *Le Veloce-Sport* he advocates the use of cyclists for scouting, as messengers, for intercepting correspondence, as signallers, for destroying and mending telegraph lines, for reporting on the state of roads, and for destroying railways, reservoirs and bridges. It is strange that in developing these points, the lecturer insists that military cyclists shall all be in plain clothes—in other words, liable to be hanged as spies.

yeomanry cavalry are sufficient to perform the same duties for the militia. We are, then, left face to face with the fact that an effective defensive army of say, 200,000* volunteers, is devoid of any rapidly moving troops, with the exception of 237† light horse and mounted rifles. As to this disproportion, further comment is needless.

Efforts are being made at the present moment to increase the number of volunteer mounted infantry. These efforts should be encouraged in every possible way; but it is not in the nature of the volunteer force, without large grants from Government, to be able to produce any great number of this expensive arm, and these grants are not forthcoming. There is, therefore, no serious prospect of volunteers being in a position to supply themselves with a sufficient number of men mounted on horses to be able to do the duties which will be required of them in case they are called out. The question at once arises, can cyclist-infantry do the work?

In discussing this question, we must clearly dispense with all considerations based on the experience of other countries, and this for two reasons. Firstly, all foreign armies have already the proportion of mounted troops which they think desirable both for offence and defence, and secondly, our cyclist-infantry being intended to act chiefly in Great Britain, we should employ them in a country intersected by roads and sub-divided by hedges—in other words, in a country specially suitable to their action, and unsuitable to the action of cavalry. At the same time, it should be

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* I have deducted 20,124 men from the 1888 returns of efficients.

† Returns for 1888. There are mounted infantry attached to some rifle battalions, not given in the returns; but their numbers are not great.

noted that there is another side to the question. It is conceivable that in a continental war we may find the supply of horses for cavalry and mounted infantry running short. The problem then might arise as to how far cyclist-infantry might work in combination with these arms, so as to relieve the strain on the horses. Although this is not a point which it is intended to discuss at any length in this chapter, it may be as well to observe that there are three ways in which cyclist-infantry might co-operate with cavalry or mounted infantry, and thereby save a great loss in horses. Firstly, the cyclist-infantry might advance along the great main roads close behind the advanced cavalry, and form a sufficiently strong body to give backbone both for resistance and attack. Secondly, they might relieve the cavalry or mounted infantry from many duties especially harassing to horses, such as conveying information and certain kinds of reconnaissances. Thirdly, in the case of an expedition landed on the coast of a hostile, but civilized country, cyclists could, in the preliminary stage, before the horses could be landed, and before they had recovered from the effects of the voyage, replace cavalry in scouting operations, in seizing distant points by a *coup de main*, and in holding them until reinforced. The operation of landing cyclists is scarcely more difficult than that of landing infantry, and could easily be performed in moderate weather in small boats on an open beach. The cycles, if properly cared for during the voyage, would be in perfect order for immediate use, and the riders should be kept in training for cycling by being daily exercised on board ship by a mechanical device such as what is known as "The Home Trainer"—a stationary cycle, by means of which the legs can be

exercised with any given resistance. Much amusement has been caused amongst unthinking persons by the fact that a body of cyclists has been raised and trained in the Royal Marine Light Infantry. Further consideration will lead to the conclusion that at the critical period of effecting a landing, Cyclist Marines might be invaluable. But it is scarcely worth while to discuss these points separately, because, if it can be shown that cyclist-infantry are capable by themselves of carrying out the four main duties above mentioned in a civilized country, it is clear that they will be able to supplement and assist other mounted arms in the performance of the same kind of work.

Thus there should be no question of rivalry between the various mounted arms. Volunteers, as a whole, see their way to developing a force of cyclist-infantry, and they have, after many years of effort, failed to obtain any important number of troops mounted on horses. The reasons for this difference are very obvious. A horse costs much more than a cycle, and demands 12 lbs. of hay, 12 lbs. of oats, and 10 gallons of water per diem *versus* a few drops of oil, which is all that a cycle requires. Also the class from which our volunteers are derived have shown themselves, in many cases experts in cycling but seldom in riding. The training of cavalry or mounted infantry will take a longer time than the training of cyclist-infantry. The labour of grooming horses is much greater than that of cleaning cycles. But in addition to the raising of a force of volunteer cyclists, a considerable number of men from line regiments now undergo a course of training in military cycling at Aldershot.

Let us, then, pass directly to the question as to how far cyclist-infantry are capable of fulfilling the

four duties which, as stated above, must be assigned to them in the absence of other mounted arms.

The first duty is that usually performed by the cavalry screen. In order to carry this out efficiently the following requirements will have to be fulfilled—rapidity, endurance, power of attack and defence, power of maintaining a continuous line of front, power of rapid concentration, independence as to supply of ammunition, indestructibility as to means of locomotion.

Let us examine how far cyclist-infantry fulfil these conditions as compared with other mounted arms.

1. *Rapidity.*—Without more experience than we possess at present it is difficult to make even an approximate calculation as to the pace at which cyclist-infantry may be expected to go under varying military conditions. The following, are, however, some data from which a calculation may be made. These "records" were, of course, done under favourable circumstances and without extra weight.

Safety Bicycle on a Road.

1. In 24 hours 324 miles=13·5 miles an hour.

2. 50 miles in 2 hours 43 minutes 32 seconds= 18·344 miles an hour.

3. 100 miles in 6 hours 39 minutes 5 seconds= 15 miles an hour.

Tricycle on a Road.

1. In 24 hours 280 miles=11·666 miles an hour.

2. 50 miles in 2 hours 50 minutes 5 seconds= 17·638 miles an hour.

3. 100 miles in 6 hours 55 minutes 58 seconds= 14·424 an hour.

Of still greater interest, perhaps, are the following "point to point" records:—London to Edinburgh on a safety bicycle in 44 hours 49 minutes. London to Bath and back on a safety bicycle in 17 hours 53 minutes and 3 seconds. London to York on a tricycle in 18 hours 28 minutes.

In the face of these figures, and considering the capability of ordinary cyclists, six miles an hour will probably be a fair calculation for cyclist-infantry in considerable bodies, when not in contact with the enemy. This will give 48 miles in a day of 8 hours. It should be observed, however, that cyclists can (if the roads are good) move over short spaces at a very high speed. But looking at this point generally, we may fairly say that, under the most adverse conditions, the pace of cyclist-infantry is considerably greater than that of infantry; that under average conditions it is greater than that of cavalry for a long distance, and that it is slower than that of cavalry for a very short distance. The last statement, however, requires some qualification, for if cyclist-infantry are careful in a hilly country to make their points for dismounting, either for attack or defence, just behind the summits of hills, they will have the advantage, both in advance and retreat, of being able to go down hill; and the descent of a hill gives the greatest advantage to a cyclist, and the greatest disadvantage to a horseman.

2. *Endurance.*—It has already been pointed out that 48 miles can well be covered on the average by a cyclist-infantry soldier in a day, and there is no difficulty, as far as he is concerned, in continuing to do this length of march day after day. As far as his machine is concerned, there should be no difficulty either, if it is strongly constructed. It may be also pointed out that spare portions, such as

wheel spokes, can be easily carried, and that when one fixed type of cycle is adopted, a complete machine will be able to be constructed out of two injured ones. These are advantages which veterinary surgery has not yet been able to confer on cavalry soldiers. Under the head of endurance, a further point may, perhaps, be mentioned, namely—that as all the energy is supplied by the rider, and not by the thing ridden, extraordinary feats may be performed under the influence of excitement or of great necessity.

3. *Power of Attack and Defence.*—Let us consider the simplest case that can arise. Say that 10 cyclist-infantry meet 10 cavalry—what are the relative advantages in a direct fight? The cavalry cannot charge, as a rule, with much effect, even if the ground is favourable, for the cyclist-infantry have all the advantages of ordinary infantry as against cavalry. The engagement is, therefore, a dismounted one on both sides. But here the cyclist-infantry have at once the following points in their favour:—They have long rifles against carbines;* they require no non-combatants to hold the cycles, and the cycles themselves are not easily injured by bullets. We may, therefore, lay down the general proposition that on fair roads cyclist-infantry have nothing to fear from approximately equal bodies of cavalry, and consequently they need not retreat, even when threatened in flanks or rear by small bodies. It should be observed on the other hand that in *open* country cyclist-infantry can be terribly harassed by small bodies of cavalry, whose own lines of retreat are secure, constantly threatening them on the flanks and rear. But any attempt on the part of

* This does not apply to mounted infantry.

cavalry to carry out these tactics in a country intersected by hedges and ditches would probably lead to severe loss to themselves.

4. *Power of maintaining a continuous line of front.*— The cyclist-infantry screen will, of course, take the form of a series of patrols moving along more or less parallel roads with supports and reserves. The formations of these patrols will be almost exactly the same as those of corresponding cavalry patrols, except that the main bodies should be, in proportion, rather stronger. In order that a continuous and unbroken front may be maintained, it is clearly necessary, firstly, to arrange for lateral communications between the various patrols; and, secondly, to leave no portion of intermediate country which could hide the enemy's cavalry unsearched. Lateral communications will, of course, be made at cross roads, and will be arranged for by the officer commanding the whole cyclist-infantry advanced force. It will be the business of the commanders of the various patrols to scout the intermediate country, using their judgment in each case, as it arises, as to how far they are justified in delaying their advance for the object of searching a particular place. The flankers employed for this purpose will be detached temporarily from the main body of the patrol. If the place to be searched is a farm or small collection of buildings off the main line of advance, there will almost always be a road or path leading to it, and the flanking party will take the form of a small mounted diverging patrol. In many cases, however, such as woods, defiles, etc., the flankers may have to proceed on foot, and the pace of the whole party would be then temporarily reduced to a walk. A further use of cyclists in this connection may be found in their

employment as signallers. When two or more columns are advancing in a close country along parallel roads, the maintenance of communication between them by signalling is very difficult, because the signallers have first almost always to leave the road to reach a high point; then to spend some time in obtaining communication; and then more time in sending the message, and receiving the answer. By this time, the column is far ahead, and they have no means of rejoining it. Cyclists, on the other hand, could rejoin in a very short time, and even go ahead to establish the next communication.

5. *Power of rapid concentration for Attack or Defence.*—The officer commanding the whole advanced force of cyclist-infantry will be in a central position, and, with the system of lateral communication before alluded to, aided where possible by signallers and telegraphists, will have the power to bring his supports and reserves rapidly to resist attack at any threatened point, or to penetrate the enemy's screen at the most vulnerable place.

6. *Independence as to supply of Ammunition.*—Cyclist-infantry will, without difficulty, be able to carry 200 rounds of M.H. ammunition, which could, if necessary, be increased to 250 rounds. With small bore ammunition this amount might be largely increased.

7. *Indestructibility of means of Locomotion.*—As before stated, a properly constructed military cycle will be less subject to accidents than a horse. It can be repaired either in the field, or at the nearest country town. The parts of different machines will be made interchangeable, so that a complete cycle can be made from two broken ones. These advantages are not possessed by horses.

The second use to which cyclist-infantry may be put is that of seizing a distant point of tactical importance. We must think of them here simply as a body of infantry capable of moving rapidly over long distances, and of fighting as infantry. But it should be noted that they have some advantage even over mounted infantry. They can, with great ease, for a portion of the distance they may have to cover, use railway transport. Any casual train, of whatever description, will serve their purpose, and they require no specially constructed platform accommodation. A few coal trucks and a locomotive are all that they need. Then, supposing that they have actually seized the point in question, and placed it in a state of defence, they have the advantage over mounted infantry that cycles consume neither water nor forage. When cyclists are employed for seizing distant points, the operations must often be of the nature of a surprise, and consequently have to be carried out at night. Here cyclist-infantry have many advantages over troops mounted on horses; they are absolutely noiseless, for even on the hardest roads, and in the stillest night they do not betray rapid approach by a sound; whereas the advance of horses can be easily detected and prepared for, as it is not difficult to judge of their numbers by the clatter of their hoofs. If a night were so dark that lamps were essential, a cavalry advance would be impossible without artificial light. So long as it is perfectly certain that the enemy could not see the advance, increased rapidity may be gained by having the cycle-lamps lighted.

The third use that cyclist-infantry may be required for is reconnaissance work. This may have to be done in actual contact with the enemy, in possible

contact with the enemy, or out of possible reach of the enemy. The advantages and disadvantages which cyclist-infantry possess with respect to the two first cases have been already touched upon under the head of "cyclist-infantry screen." In the ordinary work of reconnoitring and noting all the features of country out of reach of the enemy, the following are the chief points to observe:—

Cyclists, from the very nature of their habits, understand the use of maps from a practical point of view. They are specially able to judge as to the condition of roads for the purposes of wheel traffic, and they are, perforce, obliged to note the gradients of the hills. They can measure distances on a road with accuracy up to a few inches by counting their pedal strokes. They can dismount without having to fasten up horses to examine any special features, such as the strength of a bridge, or the accommodation and resources of a farm.

Lastly, with respect to conveying information and carrying orders there is little to say, except that over short distances the men employed in this duty would be able to proceed very rapidly, and that their power of endurance over long distances is very great.

In addition to the above special characteristics of cyclist-infantry, we may note the fact that we have in this country at the present moment an enormous recruiting ground for this particular arm, and also that little special training is required beyond what is necessary for ordinary infantry. A cyclist-infantry recruit starts, in fact, on a level with a cavalry recruit, *after* the latter has been through the riding school. The initial expense of a cycle is very small compared with a horse. The cost of keep and repair is less than

that required for shoeing, maintaining, harnessing, and stabling a horse. The labour of cleaning is insignificant, so that almost the whole of a cyclist-infantry soldier's time can be given up to acquiring skill in the necessary duties of an effective combatant, and when in the field, he is not fatigued by the labour of grooming, feeding, and watering his horse.

The choice of good forms of military cycles is a matter of great importance, and requires very careful consideration in relation to the tactical employment of cyclist-infantry. It is no doubt true that finality in this matter is not likely to be reached. Cycles improve every year, and new inventions in them frequently appear which have important military advantages. When the idea of employing cyclists for military purposes was first started, it was for conveying information and orders only, that it was proposed to use them. In that case, speed was everything, and fighting but little. A revolver, therefore, would have sufficed as an arm, if, indeed, an arm were required; and clearly the cycle which was lightest, fastest, least conspicuous, and capable of going over the worst roads was the only one worthy of practical consideration. These considerations pointed to what is known as the safety bicycle, a machine which embodies all these advantages.

But when it became clear, as the result of actual experiment, that compact bodies of cyclists, armed with rifles, could be pushed forward along roads, and could deal in actual fight with hostile cavalry or infantry, an entirely new element was introduced into the problem of the best choice of cycle; in fact, cyclists had to consider, as mounted infantry and cavalry have had to consider, how to move the mounts (forward and backward) of the men who are extended

in fighting formation. In the cases of all the three different arms, one method has to be followed, namely, that a proportion of men must be left with the mounts, to hold or guard them when stationary, and to lead or pull them when in motion; and here at once it became clear that if cycles could be so constructed that one man could pull along the machines of four men, cyclists would have two great advantages. Firstly, a few shots falling amongst the cycles would not make them unmanageable; and secondly, that as they do not require to be held by bridles, ropes, etc., the men remaining with them can use their rifles and bayonets to defend them in case of necessity.

The problem to solve, then, was the construction of serviceable cycles which could be so pulled along by a quarter of the force of men. One very interesting solution produced what is known as the "Victoria" multicycle. It carries twelve men, and has twelve wheels in pairs, the "backbone" being jointed and hinged between each pair; it can thus be broken up into sets of four, six, eight or ten. As a matter of fact, experience has shown that it is undesirable to work it except when broken up into three sets of four; but even thus, it is a somewhat heavy machine, taking the weight per man, and its steering is not altogether satisfactory. Another solution, which seems to be successful, is found in the use of "Tandem" tricycles, which can be coupled, so as to be pulled along by one man. Further suggestions have been made as to an attachment which will enable four safety bicycles to be fixed together with the same object; but these do not seem as yet to have been completely worked out. These considerations point to the employment of various types of cycle in one tactical unit, which is, at present, fixed as consisting of

one officer, a bugler, two non-commissioned officers, and twenty men, and is called a "section."

Much yet remains to be done in these directions; and the adaptation of the multicycle system for the conveyance of machine guns, reserve ammunition, tools and engineering stores, and medical requirements, is still only very partially worked out. But it is perfectly safe to assert, as a result no longer of theory but of experiment, that in a close country, with many roads and many hedges, copses and woods, cyclist-infantry can carry out effectively all the duties required of mounted troops, except in the single case of shock action.

CHAPTER XXI.

Smokeless and Noiseless Powder.

SMOKELESS powder will not upset the principles of tactics; but owing to the greater rapidity of fire when the vision is not obscured, and the increased certainty of aim arising from its use, and also the difficulty experienced by the enemy in determining whence the fire proceeds, it must to a certain extent change the conditions of modern warfare. The recent manœuvres in Germany with smokeless powder have amply demonstrated that attacking troops will, on the whole, benefit the most by its introduction. The advantages of smokeless powder with respect to artillery and infantry may be briefly summed up as follows:—

The positions of batteries in action will not be revealed at long distances by clouds of smoke, and guns will be fired more rapidly, and aimed more accurately. The objection to placing guns along the exterior line, in the defence of villages, will be partly removed by the absence of smoke to indicate their presence. The defence of woods will likewise be made easier, and the power of small bodies of troops holding forward positions to delay an enemy's advance will be greater, though they may be more exposed to the view of the enemy when withdrawing from them.

Attacking infantry will be able to approach unperceived closer to an enemy, and in the absence of smoke to indicate their whereabouts will not suffer so much from artillery fire at long ranges. Defending troops when firing rapidly at short ranges will see what is

going on in front, and will be able to direct their fire upon the enemy's reinforcements when coming up, as the latter will not be hidden behind the smoke of the firing line.

The advantages and disadvantages of noiseless powder are about equally balanced. The total absence of noise may make it more difficult to decide where the fire of the defenders has been most subdued; but it will help the assailants to conceal their real intentions; it will also favour the transmission of orders. Outposts will not be able to give warning of an enemy's approach by firing. Noiseless explosives will probably tend to increase the frequency of night operations, because firing will not attract so much attention.

Tactics generally will be affected by smokeless and noiseless powder somewhat as follows:—

Cavalry and artillery will not be able to move up unperceived behind a screen of smoke. On the other hand they will see further, and be able to direct their movements with a better knowledge of the tactical situation.

Mounted infantry will be more extensively used for scouting. In the absence of mounted infantry, cavalry may have to be boldly pushed forward to discover the whereabouts of the opponents' infantry; but, under certain circumstances, they may be subject to severe loss, as the "Revue d'Artillerie" points out that a cavalry patrol may be destroyed by an infantry piquet without knowledge of the quarter whence the fire proceeds.

The necessity for *supporting* infantry attacks by artillery and machine gun fire will be greater than ever owing to the increased rapidity of aimed fire at medium and close ranges, and for the same reason troops will have to pass more rapidly over the second and third zone of the defenders' fire.

It is calculated that the absence of a cloud of smoke will increase the rapidity of aimed fire some threefold, and so an increased supply of ammunition will be a matter of necessity; to a certain extent this will be met under the new conditions attending the 0·303 cartridges, as it is intended that instead of 70, 115 rounds

THE RECENT FRENCH MILITARY MANŒUVRES.

PARIS, September 21.—The *Temps* to-day publishes an article commenting upon the recent military manœuvres in the Nord, in which it declares that the most striking result of the use of smokeless powder is its enormous importance to a defending force, as the difficulty of reconnoitring the position of an enemy, and the danger to scouts in approaching an enemy too closely, renders an attack difficult. Henceforth, the journal says, much hesitation and long and deep thought will be necessary to draw up a plan of battle capable of being successful. Referring to the question of the Paris uniforms, the *Temps* declares that at a long distance red colour is indistinguishable, and that only dark masses can be seen. It would be necessary, however, to do away with everything that shines, such as camp utensils and musical instruments. "Artillery," concludes the journal, "should not be placed on bare and dry ground, as the firing of guns raises the dust, thus denoting their position."

THE USE OF SMOKELESS POWDER.

PARIS, September 26.—One of the points especially noted by the military observers during the recent manœuvres, when smokeless powder was used, was that in the clear atmosphere, unobscured by the smoke of battle, all bright accoutrements were seen at a great distance, thus betraying the position of various bodies of troops. It is stated to-day that in consequence of this the Minister of War has decided to submit to a technical military committee a proposal to have the helmets of the dragoons and scabbards of the officers and soldiers bronzed, so as to dull their brightness.

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[illegible] cavalry patrol may be destroyed by an infantry piquet without knowledge of the quarter whence the fire proceeds.

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It is calculated that the absence of a cloud of smoke will increase the rapidity of aimed fire some threefold, and so an increased supply of ammunition will be a matter of necessity; to a certain extent this will be met under the new conditions attending the 0·303 cartridges, as it is intended that instead of 70, 115 rounds per rifle are to be carried, but even then the strictest fire discipline will be needed. Artillery limbers may have to be built to hold more. Pursuing troops will be more liable to fall into ambuscades. Owing to the increased accuracy of the fire of the defence, and the difficulty of bringing up reinforcements, preparatory movements on the part of assailants may have to be more frequently carried out under covers of darkness. The question of the least conspicuous uniform will have to be carefully considered, and officers in future must be only distinguishable to their own men.

APPENDIX I.

EXAMINATION FOR PROMOTION.
I.

LIEUTENANTS.

Tactics.

[*Write your number on each paper, and only use one side of it.*]

1. What is the work required of cavalry in modern battles in combination with the other arms?

2. When fighting with savages much superior to us in numbers, should the same formation be used for infantry as when fighting against a civilized enemy? Describe, in general terms, what formation you would recommend, giving your reasons.

3. When artillery protected by a cavalry escort is covering the advance of a division, where should the escort be posted when the battery is in action, and at about what distance from it, and what steps should the commander of the escort take to prevent the battery being surprised by a flank attack?

4. What depth and front would be required, respectively, for—

a A regiment of infantry of eight companies, each 100 strong in column.

b A battery of field artillery in line, with full intervals.

5. How are the flanks of an advanced guard protected when moving in—

a Ordinary country?

b A country with continuous heights on one or other side?

c A country with heights much broken on one or other side?

6. You are in command of a rear guard covering the retreat of a defeated army. You find, after some time, that the pursuit of the enemy is slackening. Later on, you have reason to believe that the pursuit has ceased altogether. How would you act in each case?

7. What should be the composition of the outposts of a force in the field under the following different conditions:—

a In an open country by day and by night, the enemy not being at hand?

b In a close or intersected country when the enemy is at hand?

c In a close country, and when a bridge has to be guarded?

8. Describe the system of outposts recommended for night work. On what assumption is this system based?

9. State how outpost sentries should be posted by night under the following conditions, the cordon system being used:—

a The outpost line runs through a long narrowish wood, and the day sentries have been posted along its edge; country in front open.

b The line of day sentries has been posted along a high ridge, with open country in front.

c The line of day sentries has been posted along a low range of hills parallel to, and about 200 yards in front of the foot of a high range; country clear.

10. What do you understand by the terms "Divisional Cavalry" and "the Cavalry Division," with reference to an army in the field? What is their usual strength, under whose control are they, and what are their respective duties in the field?

II.

LIEUTENANTS.

Tactics.

1. What is the object of outposts? How is this object attained in the case of a force on the march?

2. What considerations regulate:

(*a*) The strength of a piquet?

(*b*) The distance between any two piquets?

3. You are in sight of a column of the enemy, consisting of all arms—what points would you note?

4. You are in command of—

(*a*) A half-troop of cavalry.

(*b*) A half-company of infantry,

with orders to patrol to the front. Show the formation in which you would march either of these forces.

5. What should be the character of the action of the advanced guard of a pursuing force—and why?

6. How is it that a rear guard, which is far weaker than the main force, has power to delay the advance of a victorious enemy? Upon what does this power depend?

N.B.—*The following six questions are alternative, and of them only three are to be answered:—*

7. You are in command of a battery which is ordered to open fire on a village, the latter being surrounded by shelter-trenches on a radius of about 200 yards. State the shortest range at which you would come into action, what projectiles you would use, and at what targets.

8. An infantry battalion consists of eight companies of 100 men each. What number of men must be *hors de combat* when it is found that the original front of attack of the battalion exactly contains the remainder in single rank?

9. What points are essential, and what desirable, to ensure success in a charge of cavalry against infantry?

10. A cavalry brigade (war strength) marches from A to B, a distance of 19 miles, at the rate of 4·5 miles per hour. The road is 20 feet in width. It starts at 6 a.m. At what hour will it arrive at B?

11. Enumerate the principal characteristics which tend to make a position strong for defence.

12. If you belong to the infantry or artillery, describe the several stages of action of your arm in the attack of a position.

If you belong to the cavalry, state what, in your opinion, will be the probable action of cavalry in future battles.

In each case modern European war is to be taken as the type.

III.

LIEUTENANTS.

Tactics.

1. What is meant by the "Cordon" system of sentries? Why is it considered unsuitable at night, and what method of observation would you substitute for it after nightfall?

2. What are the disadvantages attending the defence of a bridge from the enemy's side, and the conditions that might render it more desirable to take up a position in advance of it rather than attempt to defend it from the rear?

3. A force consisting of 6 battalions of infantry (8 companies, each 100 strong), 6 squadrons of cavalry (48 files), and 3 batteries of artillery, commences its march at 4 a.m. to reach a position seven miles off; at what hour will the last man arrive on the ground?

[N.B.—The infantry march in fours, cavalry in sections, artillery in column of route. The advanced and rear guards are furnished by other troops.]

4. Show by a sketch how you would form an advanced guard consisting of 2 battalions of infantry, 2 squadrons of cavalry, and 3 guns, giving the reasons for your arrangements.

The advanced guard is moving along a road in fairly open country.

5. One of the chief objects to be attained in the formation of infantry for attack is to present as small a target as possible to the enemy; this is secured by substituting an attenuated line in single rank for the old "shoulder to shoulder" line in two ranks.

Why could not the same plan be adopted in the case of artillery by dispersing instead of massing the guns?

6. Describe the general arrangements you would make for the defence of a wood, with regard to—

(*a*) The disposition of the troops under your command (artillery and infantry).

(*b*) The construction of obstacles.

[*N.B.—The following six questions are alternative; only three of them are to be answered:*—]

7. What are the different kinds of patrols sent out from a piquet, their object, and the manner in which the duties of each should be conducted?

8. What are the disadvantages attending night marches, and the precautions that should be taken to minimise, as much as possible, the dangers attending them?

9. Explain the nature of "direct," "oblique," and "flanking" fire. Of these, which is the most, and which the least, effective? Give the reasons for your opinion.

10. Under what conditions would it be more prudent to take up a defensive position at some distance from a river rather than attempt to deny the passage of it to the enemy?

11. Describe the different methods of parking waggons. If an attack were made too suddenly to admit of "parking," how could the safety of a convoy be best secured?

12. If in charge of a convoy, and the road traversed a defile, describe the dispositions you would make for passing through it.

IV.

LIEUTENANTS.

Tactics.

(*Time allowed—Three Hours.*)

1. Under the ordinary conditions of warfare, what disadvantages will be suffered by an army which is very weak in cavalry and artillery?

2. An advanced guard which has orders to push well to the front, finds itself in contact with a force of the enemy which is apparently inferior to itself. Describe the character of its action, and show how it would differ from that advisable under the usual circumstances of attack.

3. Distinguish between the "screening" and the "reconnoitring" duties of cavalry. Compare the strength needed, and the nature of the formations required for each.

4. Give the general principles on which the conduct of a rear guard action should be based.

5. Your outposts are watching a river line of which the enemy possesses the passages. How would this latter fact influence the proportion, the position, and the duties of the three arms of the outposts? It is assumed that you intend to dispute the passage.

6. Give the ordinary formations on the march (on a road) of the three arms. What would be the length of a column composed of a brigade of infantry, a regiment of cavalry, and a battery with its waggons? Each battalion has eight companies of 100 men; each squadron consists of 50 files.

7. Give the relative advantages and disadvantages of the attack and the defence with regard to infantry only.

[*N.B.—In addition to the preceding questions, any three (and no more) of the following are to be answered.*]

8. You are in command of a piquet in a line of outposts. The enemy attacks on your left, but your piquet is not engaged. Failing orders, what would you do?

9. The officer commanding a battery, which is attached to an infantry brigade, is ordered to prepare the attack of the latter on a village which is held by the enemy's infantry. State generally his mode of proceeding, from the moment when he receives the order until his own infantry have reached the edge of the village.

10. You are in command of two squadrons of cavalry, and are ordered to charge a battery which is 1,000 yards from you. The ground is in every way favourable to your attack, but the battery has an escort of about a troop. State the manner in which you would act. In case of success, how would you proceed to disable the battery?

11. A sentry reports to you, who are in charge of his piquet, that he sees a large cloud of dust advancing towards the position. What steps would you take?

12. The officer in command of a scouting party finds that his scouts have come in contact with those of the enemy. The country is fairly open, but he does not as yet know the position of the enemy's supports. How should he proceed?

13. Give the formation of an infantry advanced guard, which consists of three companies—

(1) In close country.

(2) In an open plain.

V.

LIEUTENANTS.

Tactics.

(Time allowed—Three Hours.)

1. State concisely but fully—

(*a*) The considerations which determine the strength of a scouting party.

(*b*) The difference in its formation and movements when working in an open and in a close country.

(*c*) The most important points to be remembered by the officer in command in framing and transmitting his reports.

N.B.—The subject matter of his report is *not* referred to under the heading (*c*).

2. Make a rough sketch (marking distances), showing the space occupied by a mixed force, composed of—

Three battalions of infantry (8 companies of 100 men),
One squadron of cavalry (48 files),
One battery of field artillery,

when on the line of march and when in position.

When formed up the infantry are in line of contiguous quarter-distance columns, at 30 yards interval. Artillery in line on R of infantry. Cavalry in line on extreme R. Average width of road 20 feet.

3. Describe the special characteristics of each of the three arms, pointing out the merits and defects of each.

4. As officer in charge of a reconnoitring party, what measures would you adopt on reaching a village where the enemy's outposts might be met with, in order to obtain information and supplies, while providing at the same for the safety of your party from surprise or treachery?

5. Explain the nature of "common" and "shrapnel" shell. Against what formations and at what distances is each used most effectively?

[*N.B.—In addition to the preceding questions, any three (and no more) of the following are to be answered:—*]

6. Form the force detailed in Question 2 as an advanced guard in an open country, giving the reasons for the order of march you adopt, and for the strength and composition of the different fractions of your force.

7. Upon whom does the duty devolve of regulating and of directing the musketry fire of a company?

What is the advantage and disadvantage of employing different elevations against the same object? and where the exact distance of an object is not known, by what practical method may it be ascertained without the use of instruments?

8. What is meant by "Cossack Posts?" and when is their employment desirable?

By what considerations would you be guided in selecting posts for sentries or vedettes, and what general instructions would you give to each with reference to his duties?

9. Describe the ground best adapted for the movement of that arm of the service to which you belong; if an engineer describe that for infantry, giving the reasons for your opinion in each case.

10. Explain the difference between the terms "Divisional Cavalry" and a "Cavalry Division." What determines, in general terms, the distance a division of cavalry may advance and the extent of front it may cover when screening the advance of an army?

11. What are the different duties which devolve upon the commander of a rear-guard to a force retiring in the presence of the enemy?

N.B.—This question does not refer to the disposition of the force under his command.

VI.

LIEUTENANTS.

Tactics.

1. Give a short definition of the term "Tactics," and explain what is meant by the moral and physical superiority of an army.

2. What conditions determine the strength and composition of the force required for outposts?

3. You are in command of a piquet or outpost. State what are the chief points upon which you would require detailed instructions from the commander of the outpost.

4. If in command of a small reconnoitring party, with the object of observing and reporting on a position occupied by the enemy, state how you would proceed, and what are the main points to observe and note as regards the position.

5. State generally the duties of an advanced guard, and illustrate, by a sketch, the formation suited for an advanced guard consisting of:—

One battalion of infantry.
One squadron of cavalry.
Two guns, with waggons, and a few sappers.

6. A rear guard, composed of the three arms, is protecting the retreat of an army. The officer in command has instructions to retard the pursuit as much as possible. What means should he adopt to effect this object, and what do you consider would be the most advantageous manner of employing each arm.

7. What precautions should be taken by an advanced guard:—

(1) On approaching a village?
(2) On ascending a hill?

8. What is a flank march? State the circumstances which make such a march dangerous, and the precautions required to guard against them.

9. In musketry-fire what are the distances classified as—

Short distances?

Medium distances?

Long distances?

and at short stages of the attack should volley firing be employed? State reason.

10. A force consisting of—

Three battalions of six companies of 100 men each,

Two squadrons of 48 files each,

One battery of field artillery,

is deployed in line, the infantry on the left, the artillery in the centre, and the cavalry on the right. Calculate the length of the line, with proper intervals; also calculate the space the above force would occupy on the march, infantry and cavalry moving in column of fours, artillery in column of route.

11. How should an attack of cavalry upon artillery in position, supported by a cavalry escort, be conducted?

12. Name the different kinds of projectiles used by field artillery, and state under what circumstances each would be employed.

VII.

EXAMINATION FOR PROMOTION.

LIEUTENANTS.

Tactics.

(*Time allowed—Three Hours.*)

1. State the principles according to which the selection of an infantry outpost line should be governed.

2. Give in detail the strength of—

(1.) An infantry piquet ; (2.) A cavalry piquet.

Each to furnish three sentries or vedettes, and a detached post. A main road passes through the outpost line midway between two of the sentry posts.

3. Give a hand sketch, with all distances and lengths to road marked, showing the strength and disposition of the advanced guard of an infantry division.

Give the reasons for the disposition you adopt.

4. State fully the instructions you would give the rank and file with respect to carrying out a night attack.

5. What are the three zones of fire through which troops have to advance in the attack of a position ?

Describe the formation and movements of a battalion as it passes through each.

6. A force consisting of two battalions of infantry, a troop of cavalry, two field guns, and a train of thirty wagons loaded with supplies, returning to the column to which it belongs, finds a village through which it has to pass held by the enemy.

What proceedings should the commander of the force at once adopt, and how would his subsequent proceedings be modified by information respecting the strength and composition of the hostile force and of the direction whence it has arrived at the village ?

[N.B.—*In addition to the preceding questions, any three (and no more) of the following are to be answered.*]

7. State fully the regimental arrangements for the issue of extra ammunition to a battalion immediately before and during an action.

8. State fully the arrangements for the supply of ammunition to a battery in action.

9. Describe the duties, positions, and movements of a cavalry escort to horse artillery attached to a cavalry division according as the guns are advancing, in action, or retiring.

10. How is an attack of cavalry against cavalry conducted, and what are the respective duties of each portion of the attacking forces?

11. State fully what you consider are the advantages and disadvantages likely to result in the defence of a position, owing to the increase in range of the infantry and artillery weapons.

VIII.

EXAMINATION FOR PROMOTION.

CAPTAINS.

Tactics.

(*Time allowed—Three Hours.*)

1. Describe in detail the duties which devolve upon the commander of an infantry piquet.

2. Give a general outline of how an army in the field would use its cavalry for screening and reconnoitring. What considerations should regulate the distance at which reconnoitring cavalry may precede the column to which it belongs?

3. Do you know of any practical rule for estimating approximately the length of a column on the march, without entering into minute calculations?

4. A division marches on one road with an advanced guard. The advanced guard, meeting the enemy, holds him in check until the division comes up and reinforces it in the defensive position which it has assumed across the road. The enemy now retires, and the march is resumed. Calculate the delay in the march which the incident will have caused.

5. Describe the composition of a British army corps, and the functions of each constituent part. Draw a diagram showing the different methods by which a division acting alone may be disposed for attack. Explain the comparative advantages of each method, and state under what circumstances one or the other would be preferable.

6. An advanced guard of an army on the march meets with an advancing enemy. What are the responsibilities which severally devolve upon the commanders of the advanced guard and of the different arms which compose it?

[*N.B.—The following six questions are alternative, of which only one-half (three) are to be answered:*—]

7. What are the several points to which the attention of officers should be specially directed, in connection with and during a march, in order to maintain efficiency in the troops?

8. What are the special points to be regarded in preparing and carrying out an attack by a small force of all arms? What difference would you make, generally, in the disposition and use of such a force for the attack of a wood, a village, or an open position?

9. You are placed in charge of a convoy, with a small force of the three arms as escort. State the precautions which you would take for insuring its safety.

10. If, as commander of a reconnoitring party, you are ordered to send in a tactical report on the country passed through, what are the special points which you should note?

11. Give examples from recent wars, showing—

(*a*) The advantages of the open order of modern fighting.

(*b*) The precautions necessary to be observed in its use.

(*c*) The necessity of retaining the use of close formations.

12. Within what limits of range may the several artillery projectiles be used, and what is the most effective range in each case? Up to what range may infantry fire be used with effect? Under what circumstances may long-range infantry fire be adopted, and what precautions are necessary in order to obtain the greatest effect from it?

IX.

CAPTAINS.

Tactics.

1. What circumstances affect the composition of an advanced guard? What proportion would you consider desirable to detail as an advanced guard—

(1) Of a division?

(2) Of a battalion?

Give the reasons for your reply.

3. A rear guard composed of the three arms of the service, protecting the retreat of the main body, reaches a good defensive position. The commander decides to occupy it. By what rules would he be guided in the disposition of his troops? And state if such rules would vary in any way, and if so, how, from those which would govern the occupation of the same position by a similar force under ordinary circumstances?

4. What are the chief objects of outposts? and bearing these in view, how are the troops so employed generally disposed?

5. At what time of the 24 hours are outposts generally relieved? and state the reason why such should be considered best.

6. Under what circumstances would it be desirable to have artillery with the troops on outpost duty?

[*N.B.—The following six questions are alternative, of which one-half (three) are to be answered*:—]

7. State what causes regulate the distance that should exist between an advance guard and the main body.

8. Give some idea by a diagram how you would move an advanced guard consisting of one battalion of infantry, one squadron of cavalry, and two guns. The distances between the different portions to be shown in figures, not in proportion by scale.

The country through which the advance is made is fairly open, but for the most part the troops would be confined to the road. State your reasons for adopting such disposition.

9. If a body of troops has to make a flank march, describe how the commander would minimise the danger of such a movement.

[This question does not refer to the flank being screened by cavalry, which it may be presumed it is.]

10. Describe how the attack of a village should be carried out by a force consisting of the three arms of the service.

11. Give a general outline of how a considerable force of cavalry would be employed for reconnoitring in front of an army advancing against, and seeking action with, an enemy. What are the main objects to be obtained by a good use of such a screening force of cavalry?

12. Give a few of the most important rules which regulate the working of the three arms in combination when attacking.

X.

CAPTAINS.

Tactics.

(*Time allowed—Three Hours.*)

1. What are the most important conditions that a good outpost line should fulfil, and what precautions should be taken to secure the flanks, and to prevent the enemy from breaking through the line at night or in thick weather?

2. Within what limits are distances classified as "short," "medium," "long" and "extreme"?

Compare the vulnerability of a company formed on a narrow and on an extended front, at short and long ranges.

3. Describe, in general terms, the distribution of the different arms in the advanced guard and in the main body of a division when moving in the neighbourhood of a hostile force, and show, by reference to it, the connection that exists between the tactical action of troops on the field of battle, and their order of march when advancing to it.

4. What principles should govern the selection of a defensive position, and the disposition of troops that are to occupy it?

5. What is the proper position for an escort of cavalry with guns in action, and how should the escort move when the guns advance to take up a position, or are compelled to retire from it.

[*N.B.—In addition to the preceding questions, any four (and no more) of the following are to be answered*:—]

6. When reconnoitring an enemy's position, what are the chief points on which a report should be furnished? When an enemy's column can be seen, and a map of the country is available, by what rough-and-ready rule can his strength be estimated?

7. Describe how a force consisting of three regiments of cavalry and two batteries of artillery should pass a defile in presence of an enemy.

8. What are the different means by which information can be obtained regarding an enemy, and what general conclusions can be drawn with respect to his movements, strength, and the composition of his force from the indications afforded by dust, bivouac fires, and tracks along his line of march?

9. When horse artillery are employed with cavalry acting independently, how should they co-operate with the latter—

(1) To secure an important position which has been seized?

(2) To complete the defeat of the enemy's cavalry after a successful charge?

(3) To cover their retreat and check the enemy's pursuit?

10. If, during an advance to attack the enemy's position, a counter-attack be made upon the flank of the advancing troops, by what general disposition of the force still at his disposal should the commander endeavour to meet it?

11. Explain the importance of the *rôle* which devolves on cavalry employed with a rear guard, and why it is essential that they should have the support of the other two arms when covering the retreat of a beaten army.

XI.

CAPTAINS.

Tactics.

(*Time allowed—Three Hours.*)

1. A combined force of the three arms is ordered to attack an entrenched position. Describe the part ordinarily taken by each arm in preparing and carrying out the attack.

2. The "Infantry Field Exercise" states that "a battalion formed for defence will be divided in the manner as one formed for attack." Name the component parts of the foundation, and show what differences exist in their actual dispositions when employed in defence instead of attack.

3. State the nature of the several duties which may fall to the lot of the advanced guard of a column moving through an enemy's country. Show by a diagram the composition and disposition of a suitable advanced guard for a British division marching in a fairly open country, with the possibility of encountering the enemy.

4. How should the head of an advanced guard act—

(*a*) When approaching a village?

(*b*) When entering a defile?

(*c*) When ascending a ridge which crosses the road?

5. Describe the duties of an officer commanding a piquet, and state how he should act in the event of the line watched by his sentries being attacked by day.

6. A force, consisting of two divisions, is marching through a country in which roads are numerous, assume—

(*a*) That the enemy is close at hand,

(*b*) That the enemy is far distant,

and state the general arrangements you would make as regards the order of march of the main columns. (No allusion to screening or flanking parties is required.)

[*N.B.—In addition to the preceding questions, any three (and no more) of the following are to be answered*:—]

7. Name all the different kinds of patrols employed on outpost service, and state the duties of each respectively.

8. What are the formations in which cavalry, artillery, and infantry usually march on fenced roads?

Calculate the approximate strength of a force of infantry on the march on a road, it having been noticed to take 18 minutes in passing a cottage.

9. With regard to night marches—

(*a*) Why should they, as a rule, be avoided?

(*b*) What precautions should be taken to minimise the attendant dangers?

(*c*) Mention some cases in which it may be desirable to undertake a night march.

10. Why should not the whole of a cavalry force in attack be employed in the front line? Explain, or show by a diagram, how a strong body of cavalry would be formed for attack.

11. Describe the kind of country which is most favourable in the following cases:—

(*a*) For cavalry advancing to attack.

(*b*) For artillery acting on the defensive.

(*c*) For infantry attacking an entrenched position.

12. Calculate the minimum strength by day of an infantry piquet which furnishes three double sentry posts. Two of these posts cannot be seen from the piquet, but both are visible from a knoll 200 yards in front of, and in view of, the piquet. A wooded ridge, with open country beyond, runs parallel to the line of the sentries at about three-quarters of a mile in front. Communication with adjoining piquets is to be maintained, and an adequate number of non-commissioned officers should be detailed.

XII.

CAPTAINS.

Tactics.

(*Time allowed—Three Hours.*)

1. Describe, and illustrate by diagrams, the regulated method of attack by a cavalry division, accompanied by the usual proportion of horse artillery. Assume, first, that the charge is successful, and, secondly, that it is unsuccessful.

2. Explain the principles upon which the attack formation of infantry is based.

3. What are the general rules affecting the positions and objective of artillery in the attack of an entrenched position?

4. Indicate, by a rough hand-sketch, the normal positions and formations of the several component parts of a division which, in attacking a position, has just reached the stage when the infantry fire commences. Give explanations, and mark all distances and measurements of fronts.

5. Show how the distribution of the different arms on a march, near the enemy, is influenced by tactical considerations, as regards both main body and advanced guard.

6. Describe the *rôle* of a rear guard, composed of all arms, which covers the retreat of a defeated army against pursuit by the enemy.

[*N.B.—In addition to the preceding questions, any three (and no more) of the following are to be answered*:—]

7. Describe the various kinds of scouts used in military operations, and detail their duties in each case.

2. Show how intelligent reconnoitrers may obtain valuable information from such traces of the enemy as clouds of dust, bivouac fires, deserted camping grounds, trenches, noises, &c.

9. What are the principal points of difference in the distribution and conduct of outposts by day and by night?

10. What are the general rules as to the limits of employment of musketry fire? and what are the comparative advantages of volleys and independent firing?

11. Compare the several modes of defending a river line.

12. How would you dispose troops of a mixed force for the defence of a wood?

XIII.

EXAMINATION FOR PROMOTION.

CAPTAINS.

Tactics.

(*Time allowed—Three Hours.*)

1. Detail the composition, and show by a diagram, the formation of the combatant portion of an independent division on the march in ordinary country. All intervals and distances must be given.

2. You are ordered to reconnoitre the road from Wingate to the north point (*see* accompanying map) with a view to its use for a night march. What points would you especially note, and what precautions would you take to prevent the possibility of the troops losing their way ?

3. A division at war strength is bivouacked about Moorfield (*see* the map), the enemy's outposts being in sight on Barlingford Hill. Show, within the limits of the map, the position of the sentry line and that of each of the other fractions of a line of night outposts posted to cover this bivouac.

4. The enemy having occupied his position on Barlingford Hill, the division forms on Goring Down for attack; the right brigade being intended to fight merely a containing action, while the actual assault is to be delivered by the left brigade. Show on the map the line on which you would form the division for attack, and the positions which you consider the artillery and cavalry should occupy at the moment when the advance commences.

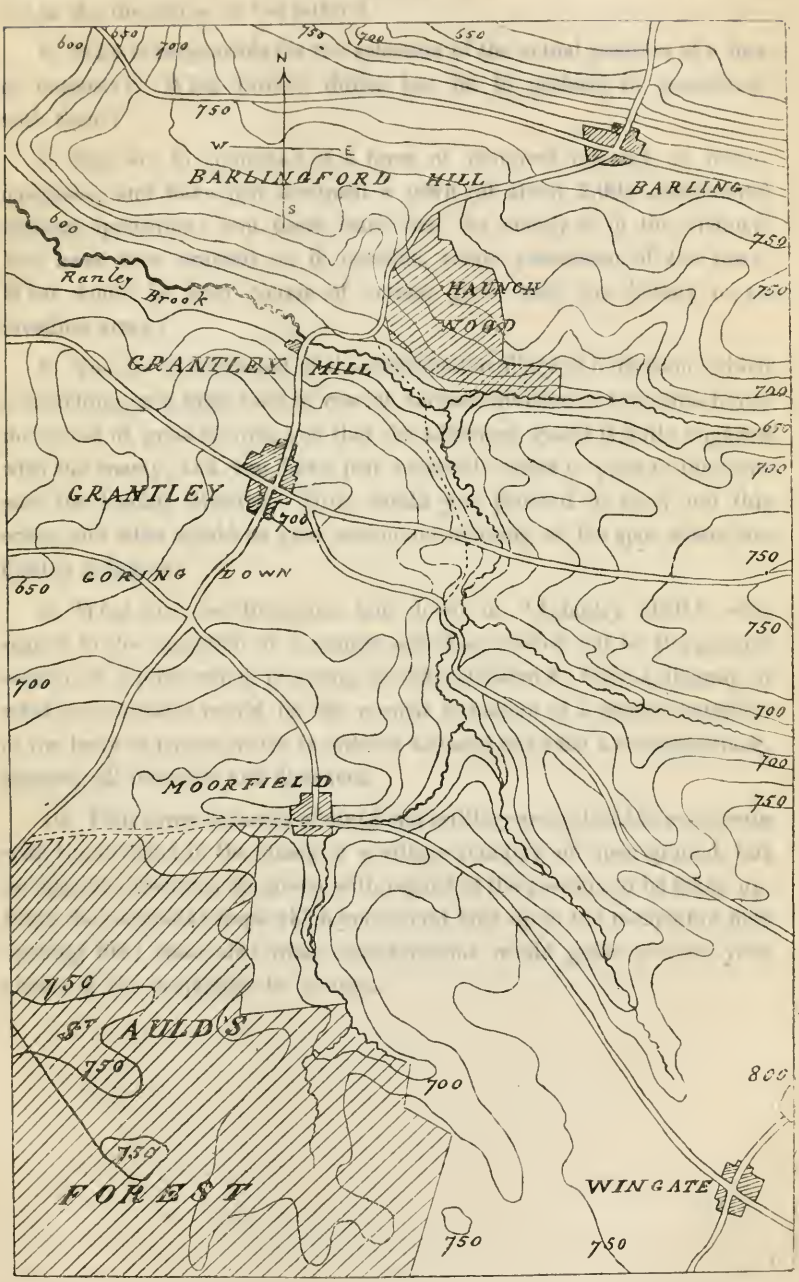
Give also a diagram showing the actual formation of the division (as laid down in " Infantry Drill,") marking all distances and intervals.

[N.B.—*In addition to the preceding questions, any three* (*and no more*) *of the following are to be answered.*]

5. The officer commanding a cavalry division finds himself in the presence of an equal force of the enemy's cavalry, and determines to

EXAMINATION FOR PROMOTION.

CAPTAINS.



MAP 1

EXAMINATION FOR PROMOTION.

attack them. What instructions should he give to the officer commanding the horse artillery of his division, and what matters would, as a rule, be left to the discretion of the latter?

6. Who is responsible for the selection of the actual position of a line of outposts? What further duties has he to perform in connection with them?

7. You are in command of a force of mounted infantry on reconnaissance, and have just occupied a town (of about 2,000 inhabitants) without opposition; you there learn that the enemy is in the vicinity. You have been ordered to, if possible, retain possession of the town. What would be your course of action, given that you belong to an invading army?

8. You are in command of the divisional artillery of a division, which is marching on a high road in rear of another division of the same force; the sound of guns informs you that the advanced guard is hotly engaged with the enemy, and you have just received orders to push to the front past the leading division. How would you proceed to carry out this order, and what would be your action on arriving at the spot where the fight is going on?

9. What are the directions, laid down in "Infantry Drill," with regard to the execution of a counter-attack as carried out by the general reserve of a force which is acting on the defensive? Give a diagram of what you consider would be the normal formation of a central battalion of the body of troops which is ordered to carry out such a counter-attack, showing all intervals and distances.

10. Your three batteries of divisional artillery are ordered to co-operate with the division in the attack of a village standing on open ground, but no specific directions are given with regard to the position to be taken up. State the successive steps which you would take up to the moment of first opening fire; state also what considerations would guide you in your choice of the projectiles to be used.

XIV.

EXAMINATION FOR PROMOTION.

CAPTAINS.

Tactics.

(*Time allowed—Three Hours.*)

1. You are in command of a force, consisting of a brigade of infantry, a squadron and two batteries, which is acting as a rear-guard to troops which are retiring from Heathley to the south. Your force bivouacked at Morecombe, and your cavalry is now in contact with that of the enemy, the head of whose advanced guard is about 3 miles distant to the north. Show by a diagram your order of march, and state what precautions you would take, between Morecombe and Barston, to delay his advance.

2. On arriving at Pedlar's Cross you receive an order to hold the enemy for an hour; select a position for this purpose, and show how you would dispose your force.

3. Describe in detail the advantages and disadvantages of your position; and state how you would propose to draw off your troops at the expiration of the prescribed time.

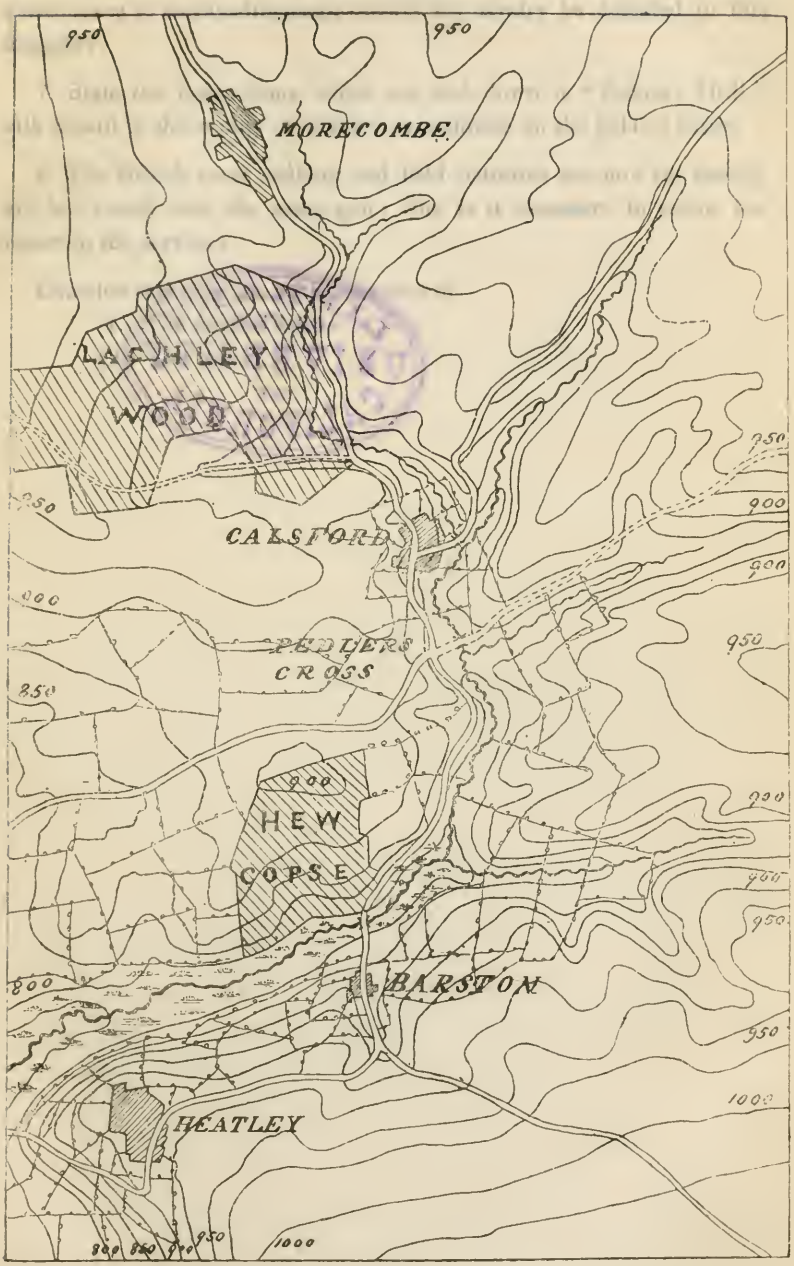
4. Given that the road from Heathley to Morecombe is the main line of communication of an army (of 10,000 men) which has advanced northwards beyond the map, and that it is desired to select a village as a depôt on that line; make your choice and give your reasons for it, stating also, very briefly, the general plan on which you would prepare that village for defence. The enemy has no artillery, possesses only inferior fire-arms, but is fierce in attack, and skilled in hand-to-hand fighting.

[N.B.—*In addition to the preceding questions, any two (and no more) of the following are to be answered.*]

5. You are in command of a section of outposts between the north side of Latchley Wood and Barston Bridge, facing east; show on the map your dispositions by day and night, stating what force you consider sufficient for this duty, and also whether you require guns and cavalry.

EXAMINATION FOR PROMOTION.

CAPTAINS.



MORECOMBE
HEATLEY

6. It is admitted that the next European war will probably begin by a contest between the cavalry masses of either side; what would be the consequence to an invading army should its cavalry be defeated in this struggle?

7. State the instructions, which are laid down in "Infantry Drill," with regard to the supply of infantry ammunition on the field of battle.

8. The British horse artillery and field batteries are now (or shortly will be) armed with the same gun; why is it necessary to retain the former in the service?

Examine this question with reference to—

(1.) The field of battle.

(2.) The march.

XV.

MILITARY COMPETITIVE EXAMINATION

OF

LIEUTENANTS OF MILITIA

FOR

COMMISSIONS IN THE LINE.

Tactics.

(Time allowed—Three Hours.)

[*N.B.—The answers in all cases should be full without being needlessly discursive; intelligence combined with conciseness will be specially commended. When the reply to a question admits of the exercise of individual judgment, the grounds upon which the candidate's opinion has been formed should always be stated.*]

1. As a general rule, what proportion should the troops composing an advance guard bear to the main body?

If an advance guard consist of—

One battalion of infantry, 1,000 strong (eight companies),
One squadron of cavalry, and
Three guns,

how would you distribute the different arms on the line of march?

2. Describe the various means by which the safety of an army on the march and its repose when halted are secured.

3. The commander of a force A, composed of—

One brigade of infantry (three battalions of 800 men each),
Three squadrons of cavalry (96 men each),
One battery of artillery, and
One company of engineers (100 men),

is ordered to seize an important position at a distance of eight miles; he receives information that a force of the enemy B is moving so as to occupy the same ground, and that his advance guard is expected to reach it by 8 a.m. At what hour must the commander of the force A commence his march so as to anticipate B, and have his force formed up on the coveted position by half-past 7?

Infantry to move by fours,
Cavalry in column of sections,
Artillery in column of route.

4. Describe the various changes that have taken place in infantry tactics from the time of Frederick the Great to the present day; and explain the merits and defects of each system.

5. What are the chief points to be considered when posting sentries for out-post duty?

6. How can cavalry be employed most effectively in action? Give an example to show the rashness of using cavalry against unbroken infantry.

7. Describe the different guns and projectiles used by artillery in the field and the special value of each.

8. How are distances and intervals measured between guns limbered up and in action? What extent of front does a field battery occupy in line, at half, and at full intervals?

9. Describe the method of "parking" a convoy—

(*a*) To resist an attack.

(*b*) For a halt, when not liable to be attacked.

10. Explain why a long stretch of river with several points of crossing cannot be considered a strong line for covering the front of an army.

11. Show, by a pen and ink sketch, the dispositions you would make for holding a defile in front against a superior force.

You have at your disposal,

One battalion of 800 men.
One squadron
Three guns.

12. What are the chief points to be considered before commencing to place a village in a state of defence, and where should the work be commenced if you were apprehensive of an immediate attack?

XVI.

MILITARY COMPETITIVE EXAMINATION.

OF

LIEUTENANTS OF MILITIA

FOR

COMMISSIONS IN THE LINE.

Tactics.

(*Time Allowed—Three Hours.*)

1. How are infantry on outpost duty subdivided; and with what object?

2. What are the general rules which apply to—

1st. The composition of outposts?

2nd. Their strength?

3. There are two kinds of piquet patrols; explain what are the duties of each respectively.

4. You are directed to go forward and reconnoitre a certain length of road, which the commander of the force may intend to move by the following day. You *come to a village*, *cross two streams*, *one by a bridge*, and *the other by a ford; you pass for a mile through a wood*, and, in parts, the country on each side of the road is hilly. Give the points in connection with each of these items which you would bring to notice in your report.

5. What proportion of a considerable force, say a division, would generally be detached as an advanced guard; and would this same proportion hold good, in reference to a small force, say a squadron of cavalry marching with a battalion of infantry? Give the reasons for your reply.

6. How would you post a battalion, as a unit of the first line of defence of a position; and what extent of front would an ordinary battalion of eight companies occupy?

7. Under what circumstances could it be deemed expedient in an action for cavalry to attack artillery?

8. What are the advantages of defending a defile from a position in rear of it?

9. If a column is marching with a prospect of meeting an enemy, and coming into action, what order, in regard to each other, would the main portions of the three arms be placed in the column of route? Give the reasons for your reply.

10. Suppose the infantry of an attacking force to have succeeded in carrying the position at a decisive point, how would you employ the artillery and cavalry of the attack with a view to secure the advantage gained?

XVII.

MILITARY COMPETITIVE EXAMINATION

OF

LIEUTENANTS OF MILITIA

FOR

COMMISSIONS IN THE LINE.

Tactics.

(Time allowed—Three Hours.)

1. (*a*) Six companies of infantry (each 120 strong) are detailed for outpost duty, in average country, to cover by day the front of a force in contact with the enemy. Show by a rough sketch the distribution of the line of outposts, marking on it the distances and intervals between its several portions, and adding your reasons for such distances. Each piquet is to consist of 40 men, and is to furnish 3 to 4 double sentries. The flank piquets are to overlap the flanks of the force. As great an extent of front as possible is to be covered. Resistance, as well as observation, is contemplated.

(*b*) What are the general positions and duties of each of the sub-divisions of the outpost chain?

2. (*a*) On what does the distribution of each arm in a column on the march depend, when it is moving in proximity to the enemy?

(*b.*) What is the average rate of marching of the different arms, when moving on separate roads?

3. An advanced guard meets on its march—

(1) The enemy's advanced guard in inferior force,

(2) The enemy's advanced guard in superior force, and

(3) The enemy's army entrenched in position.

What action should be taken by its commander in such case?

4 (*a*). Give a diagram of a battalion of infantry of the first line, extended for the attack of an enemy's position, at about 2,000 yards from it, as laid down in the Infantry Field Exercise.

(*b*). Give, briefly, the reasons for the adoption of this and the other formations it successively assumes in the attack.

5. Point out the manner in which the cavalry, artillery, and engineers, of a rear guard to a retreating army (either defeated or retiring to avoid an engagement) should be employed, and examine why it is of importance that each of these arms should be represented in such a force.

6 (*a*). What is a defile?

(*b*) From what different positions may the defence of a defile be carried out? When may it be imperative to adopt one or other of such methods, and what are the respective advantages and disadvantages of each?

7. Describe the manner in which the attack on a village that has been strengthened should be made when the fire of artillery can be brought to bear on it.

8. How are convoys by water conducted, and how should such convoys be attacked?

9. What are the essentials for making long-range infantry fire effective, and what experience in regard to this has been acquired in the course of recent wars?

XVIII.

MILITARY COMPETITIVE EXAMINATION
OF
LIEUTENANTS OF MILITIA
FOR
COMMISSIONS IN THE LINE.

Tactics.

(*Time allowed—Three Hours.*)

1. What considerations aid in forming a calculation as to the number of men required for an outpost force?

As a general rule, what proportion should the outposts bear to the total effective strength of the main body to be covered?

2. State the proportionate strength of the several subdivisions of an outpost force under ordinary circumstances, and enumerate the various means that may be employed to maintain communication throughout the whole area on which the outposts stand.

3. (*a*) Show how a well organized system of patrols adds to the efficiency of an outpost force.

(*b*) Explain the two entirely distinct objects with which the "strong patrols" and the "reconnoitring patrols" mentioned in the Field Exercise Book are respectively employed.

4. What are the various methods usually adopted by a commander in the field (1) to mislead the enemy as to his intentions, and (2) to conceal his movements, strength, and position?

5. (*a*) What are the usual marching formations of cavalry?

(*b*) Compare the relative merits of these formations.

(*c*) If 600 troopers trotting along a road take $2\frac{1}{2}$ minutes to pass a given point, what formation are they in, and what is the minimum width of road required for the formation? Show your calculations.

6. (*a*) Why should a strong advanced guard ordinarily be composed of all three arms?

(*b*) Explain the special functions of each arm when employed on this service.

(*c*) What position on the march would you assign to the artillery of the advanced guard? Give the reason for your answer.

7. A cavalry charge should be sudden, rapid, and opportune. Analyse this statement, and prove its truth under the conditions of modern civilized warfare.

8. During a campaign the action of each of the three arms becomes in turn paramount. Show, by an examination of the nature of the operations commonly undertaken by an army in the field, what are the tactical reasons which cause each arm to assume temporarily the principal *rôle*.

9. (*a*) Show by diagrams the English battalion formation for attack—

(1) On the first extension of the battalion.

(2) At about 150 paces from the enemy's position.

(*b*) Mark on your diagrams the names of the component parts of the formation, the frontage, and the distances.

(*c*) Explain clearly the manner in which this formation is intended to fulfil the double requirement of developing and supporting a front attack without laying itself open to destruction in accomplishing it.

10. What tactical considerations would influence your selection of a point of passage on a river line which is held defensively by the enemy.

Supposing that all the requirements do not exist at any one point, specify the two conditions which you consider the most essential.

XIX.

MILITARY COMPETITIVE EXAMINATION

OF

LIEUTENANTS OF MILITIA

FOR

COMMISSIONS IN THE LINE.

Tactics.

(*Time allowed—Three hours.*)

1. Describe what a piquet is, and how its strength and its position relatively to the other component parts of outposts, and to the main body, are determined?

2. What changes in the distribution and working of outposts by day are usually made at night, and for what reasons?

3. What qualifications would you look for in selecting men to compose a reconnoitring patrol to be sent out from a piquet, and what general instructions would you give to guide them in this work?

4. What precautions should be taken respectively before and during a march of some days' duration to reduce to the utmost the fatigues of the march?

5. Describe, and illustrate by diagrams, the difference in the formation of a battalion for attack and defence respectively; and explain the principles upon which each is based.

6. On what principles is the fighting formation of cavalry based? Show how the value of those principles has been proved in war.

7. Explain the special *rôle* of each arm in the attack of a position.

8. Explain the object and method of action of a rear-guard of all arms which covers a retreating force.

9. What advantages does a wood afford generally as a defensive position; and how would you dispose a force of all arms for its defence?

10. What are the general principles for directing and regulating musketry fire in action; and with whom does the responsibility for its proper direction and regulation rest?

11. Show, by brief reference to the conduct of the campaign in 1887, what special tactical lessons are derivable from that campaign.

XX.

COMPETITIVE EXAMINATION OF MILITIA SUBALTERNS FOR COMMISSIONS IN THE ARMY.

TACTICS.

(*Time allowed—Three Hours.*)

1. (*a*) What considerations should guide you in the selection of an outpost line?

(*b*) What are the comparative advantages of placing outpost sentries in pairs or in groups, and what is the difference in their organization?

2. Describe the methods by which information regarding an enemy is obtained and communicated; also the precautions which should be observed by all engaged in collecting or forwarding it.

3. Describe the precautions which should be observed in connection with a march, in order to ensure efficiency at the end of it.

4. Give the strength and composition of the advanced guard which would be furnished under ordinary conditions by a division acting independently. Explain how such advanced guard should be distributed, giving full reasons for such distribution.

5. Describe concisely the general method by which a position should be attacked by a force of all arms.

6. In what respects do the relative positions and the respective duties of the several lines of troops in defence differ from those in the attack?

7. A rear guard covering the retreat of a division proceeding northwards is ordered to make a stand at a river valley which crosses the road of retreat.

The river, flowing westwards, is crossed by a bridge on the main road, and by others half a mile above and below, while half a mile lower still is a ford.

The slopes of the valley are open and gentle, that on the south side extending for three-quarters of a mile, the northern slope half a mile; each slope is crowned by a wooded belt commanding a clear view of the

country to the south of it; beyond the valley, to the north, the country is enclosed; a few buildings exist near the bridge on main road.

Explain how you would manœuvre the rear guard with a view to retard the enemy in this neighbourhood. Draw a rough sketch of the country, indicating on it the positions you assign to the various fractions of the rear guard, giving full reasons.

8. Under what conditions, and subject to what precautions, may cavalry attack—

(*a.*) Infantry,
(*b.*) Cavalry,
(*c.*) Artillery?

9. What are the comparative advantages of volley firing and independent firing? When should each be used, and what precautions are necessary in action to ensure good effects of musketry fire?

XXI.

ROYAL MILITARY COLLEGE.

HIGHER EXAMINATION, 1887.

Tactics.

1. What are the objects of outposts, and why are they necessary?

2. What conditions as regards the strength and disposition of outposts must be fulfilled in order to ensure the attainment of those objects?

3. Enumerate the duties of the officer commanding a piquet

4. What are the duties of a sentry on outpost?

5. How are the posting of piquet sentries and the number and strength of piquets affected by varieties of ground and local features?

6. What are the main precautions which should be observed by an officer sent in charge of a reconnoitring party?

7. Why are the fatigues of a march greater for a large force than for a small one? How can this fatigue be lessened?

8. What extra precautions are necessary in the case of a night march?

9. What are the main principles which regulate the tactical use of cavalry, both in offensive and defensive action?

10. Describe, in general terms, the distribution of the different arms in the advance guard and in the main body of a division when moving in the neighbourhood of a hostile force, and show by reference to it the connection that exists between the tactical action of troops on the field of battle and their order of march when advancing to it.

11. Within what limits are distances classified as "short," "medium," "long," and "extreme?" Compare the vulnerability of a company formed on a narrow and on an extended front at short and long ranges.

XXII.

ROYAL MILITARY COLLEGE.

JUNIOR EXAMINATION.

Tactics.

1. What are the three principal objects of covering the front of an army by cavalry and infantry outposts?

2. How should a double sentry on outpost duty act when approached by

(1) An armed party,
(2) A civilian or peasant,
(3) An armed soldier or deserter,
(4) A flag of truce?

3. The cavalry of an army is in part assigned to a division, and in part retained as a distinct body.

(1) What terms are used to denote the cavalry divided as above?
(2) What is the composition of each?
(3) What are the special duties of each?

4. Mention the tactical considerations which would influence you in determining the actual point of crossing a winding river?

5. A reconnoitring patrol reports at daybreak a column of infantry in fours, with 8 intervals; took 40 minutes to cross the railway; they were followed by a force of artillery with 3 intervals, in column of route which took ten minutes to pass; the whole force appeared to be moving at $3\frac{1}{2}$ miles an hour. What was the force?

6. What precautions should be taken by the advanced party of a force in entering a village in the enemy's country?

(2) If scouts meet the enemy in the village, what should they do?

(3) What are the first seizures made in occupying a village or a town?

7. In what position should the escort to a battery of artillery in action be placed, and what precautionary measures should it take?

8. What are the principles regulating the conduct of a rear-guard?

XXIII.

ADMISSION TO THE STAFF COLLEGE.

FIRST PAPER.

Tactics.

(Time allowed—Three Hours.)

1. What are the different projectiles used by artillery, and under what circumstances should they be respectively employed?

2. A scout reports that a column of the enemy's troops on the march was timed by him to pass a certain point as follows:—

Cavalry, in half sections, at a trot, took 12 minutes; artillery in columns of route, at a trot, took $2\frac{1}{2}$ minutes; and, after an interval, infantry, in fours, took 15 minutes. What was the approximate strength of the force?

3 (*a*). What are the respective duties of the vanguard and main body and an advanced guard, and how is the relative position of the different arms in the order of its march decided upon?

(*b*). What particulars should be furnished in the reports transmitted by the officer in command of the vanguard?

4 (*a*). What are the duties of "supports" in outpost duty? What are the most suitable positions for them. What is their usual strength in proportion to that of the piquets. What distance should separate them from the line of piquets; and on what does this depend?

(*b*). When is it advisable that supports should be posted close in rear of the piquets?

(5). With what objects are small reconnoitring parties sent out, and what instructions should their commanders receive as to the precautions to be adopted on the march, encounters with the enemy, &c.? If the enemy's position is to be observed, what points in regard to it are to be noted?

6. A division of our army, at war strength, is marching southwards. On reaching the junction of the roads (*vide* plan, Plate XXIII.), its commander is directed to take up a defensive position on the open heights to the west of the river, which is to be held to the last.

The enemy is advancing from the south. Time is available for the construction of shelter-trenches and gun pits.

Show on the plan the distribution of the force you propose, and give a clear explanation of your scheme of defence.

It is not deemed necessary to throw out outposts.

7. What do you consider to be the advantages and disadvantages of the position you select?

8. The enemy's force stronger than the defending one by two squadrons of cavalry, one battery of field artillery and two battalions of infantry, is, on arrival within range of the latter, directed to attack it.

Give a concise account of the main features of the action that may be expected to ensue.

XXIV.

ADMISSION TO THE STAFF COLLEGE

SECOND PAPER.

Tactics.

(*Time allowed—Three hours.*)

1. A force of two regiments of cavalry, two batteries of field artillery, and four battalions of infantry is drawn up in line, cavalry on the right, infantry on the left. Find its frontage. The force marches along a road for a distance of four miles, and again deploys to the front, in the same order as before, with its left resting on the road: in what time would this be completed?

2. (*a*). Why is it considered necessary that the cavalry and artillery of a rear-guard should be equal in strength to the same arms of the pursuing force?

(*b*). What is the general action of a rear-guard when operating as a retarding force?

(*c*). When may it prove necessary for a rear-guard to make counter-attacks?

3. What system is now adopted for outpost duty at night? What advantages are claimed for it, and how is it affected by the nature of the country?

4. (*a*). What are the general duties which in modern warfare, devolve upon the cavalry, that it is pushed forward in advance of an army marching to meet an enemy?

(*b*). Three regiments of cavalry (two light and one heavy), with a battery of horse artillery, are sent forward to a distance of two days' march from the force which they are covering: how should they be distributed and employed?

5. In an attack by infantry, compare the formations and duties of the "fighting line" of the present with those of the "skirmishers" of the past, and point out the reasons for the changes that have been made.

6. What scope is there generally for the employment of cavalry on the field of battle, and how is its action influenced by the nature of the ground manœuvred over?

7. What do you understand by "decisive points" and "secondary points" on a position? Give examples of such points.

8. (*a*). State some of the positions in which villages, held as independent posts, may be utilised in a campaign.

(*b*). What difference would be made in the preparation of such a village for defence to that of one which was to form part of a general position?

9. (*a*). What are the dangers to which a force making a night march is exposed, and what precautions should be adopted to minimise them?

(*b*). What description of country is favourable to the success of such a march and why?

XXV.

ADMISSION TO THE STAFF COLLEGE.

TACTICS.

First Paper.

(*Time allowed—Three Hours.*)

[N.B.—*The whole of the ground shown on the map* (*with the exception of the river valleys, which are cultivated, and the woods as marked*) *is moorland, firm on the hills, but marshy at the heads of the valleys.*]

1. A British division at war strength is encamped, with its train, in the valley between Cawfield Moor and The Malkin; it is ordered to march to Maldon Brow. What arrangements would you make for this march, given that the enemy is advancing from the south, and is within striking distance?

Illustrate your answer by reference to the map.

2. The division takes up a position, facing south, to cover the road Cawfield-Croxford-Harmoor against a force which is advancing from Cawfield. Show the general dispositions which you would make for defence, distinguishing the post of each batallion of infantry, of the artillery, and of the cavalry.

Give your reasons for such dispositions.

3. The force which is advancing from Cawfield, consisting of two divisions, is ordered to attack the above position. Give the general plan of attack, together with criticisms on the strong and weak points of the position, showing on the map the position of each of the three arms at the moment when the infantry first come under the fire of the enemy's artillery.

[N.B.—*One* (*and one only*) *of the following questions is to be answered.*]

4. (*a*) Give a detailed description of the order for attack of infantry (as laid down in "Infantry Drill,") taking as an example the case of a division which forms the left wing of the attack of an army-corps, and which is itself liable to a counter-attack on its left flank.

Give diagrams of the formation of each unit.

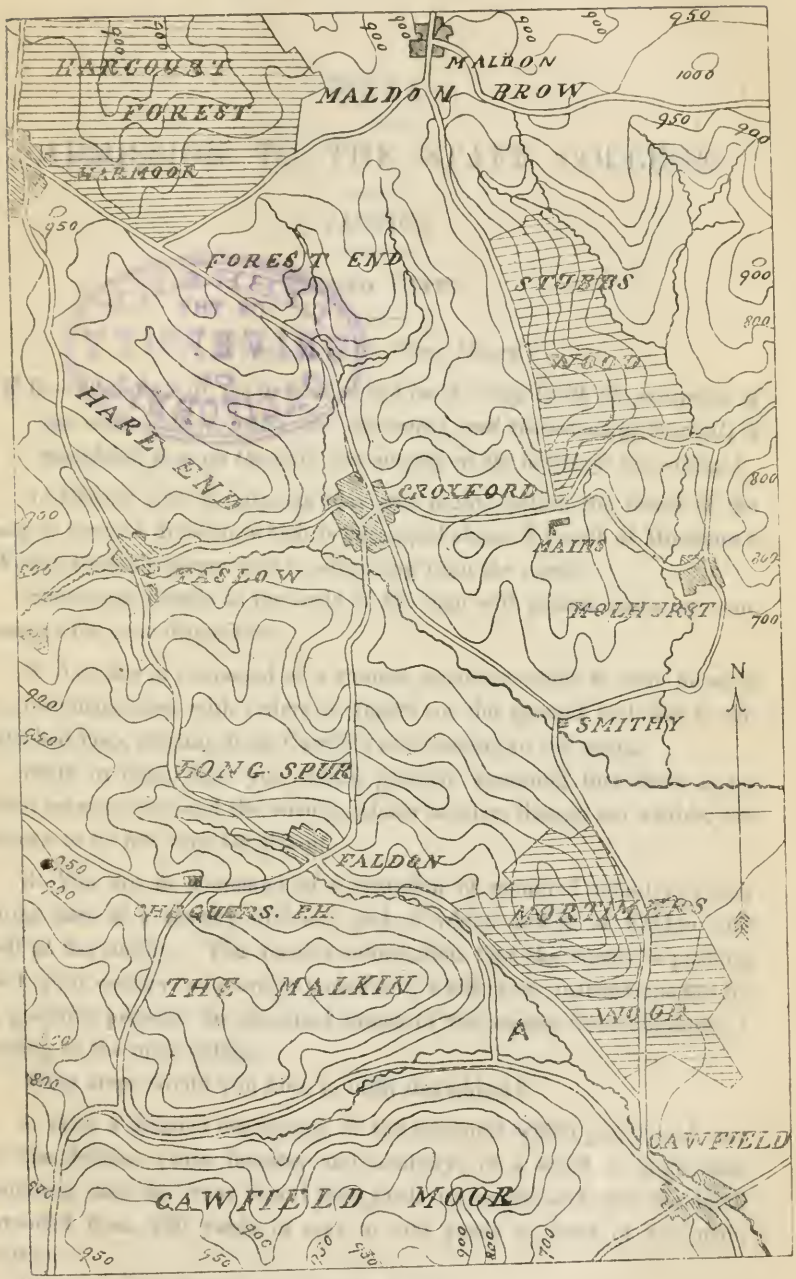
(*b*) What opportunities still, in your opinion, remain for cavalry on the actual field of battle, where would you seek for them, and how would you make use of them?

Give diagrams of such formations as you would use under the several circumstances.

(*c*) Trace the sequence of the conventional system of employing artillery in the attack, giving details of each phase, and drawing attention to the duties of the officers commanding the various units.

It is assumed that the enemy's artillery is inferior, and that the action proceeds steadily to success.

ADMISSION TO THE STAFF COLLEGE.



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XXVI.

ADMISSION TO THE STAFF COLLEGE.

TACTICS.

Second Paper.

(Time allowed—Three Hours.)

[N.B.—*The whole of the ground shown on the map (with the exception of the river valleys, which are cultivated, and the woods as marked) is moorland, firm on the hills, but marshy at the heads of the valleys.*]

1. Place a line of outposts (day and night) within the limits of the map to cover a division, which is encamped about A (south of Mortimer's Wood), from an enemy who is advancing from the north.

Show such details as the scale of the map will permit, and give your reasons for your dispositions.

2. You are in command of a contact squadron which is sent forward on reconnaissance, with orders to report on the ground included in the attached map, starting from Cawfield and moving to the north.

State in detail how you would proceed, assuming that there is no force between you and the enemy, whose cavalry, though not visible, are known to be not very far distant.

3. You are in command of a battalion of mounted infantry, which forms part of a cavalry division, and of which half is at Faldon, and half at the smithy. You receive information that the enemy is pushing back your cavalry, who are in your front, while your instructions are to, if possible, prevent the mounted forces of the enemy from obtaining a footing in the main valley.

What steps would you take to fulfil this object?

4. Give a detailed description of the measures which you would take for the defence (with infantry and artillery) of a wood of large size, assuming that the front was 1,000 yards in length, and that the depth extended from 200 yards in rear to 500 yards in front of the main position.

Illustrate your answer by a rough sketch.

XXVII.

ADMISSION TO THE STAFF COLLEGE.

TACTICS.

First Paper.

(*Time allowed—Three Hours.*)

1. You are reconnoitring in front of an army which is marching from the south towards the north. Send in short reports, describing the section of country H.-A., despatching them from—

(1.) Warton.
(2.) Maxtone.
(3.) The point A.

You may assume that you find no traces of the enemy.

2. You are in command of a brigade of infantry, a squadron and a battery, marching from H. on A. On arriving at H., you are informed by your cavalry that the enemy (in unknown strength) is in occupation of the edges of Hawk and Owl Woods, facing south.

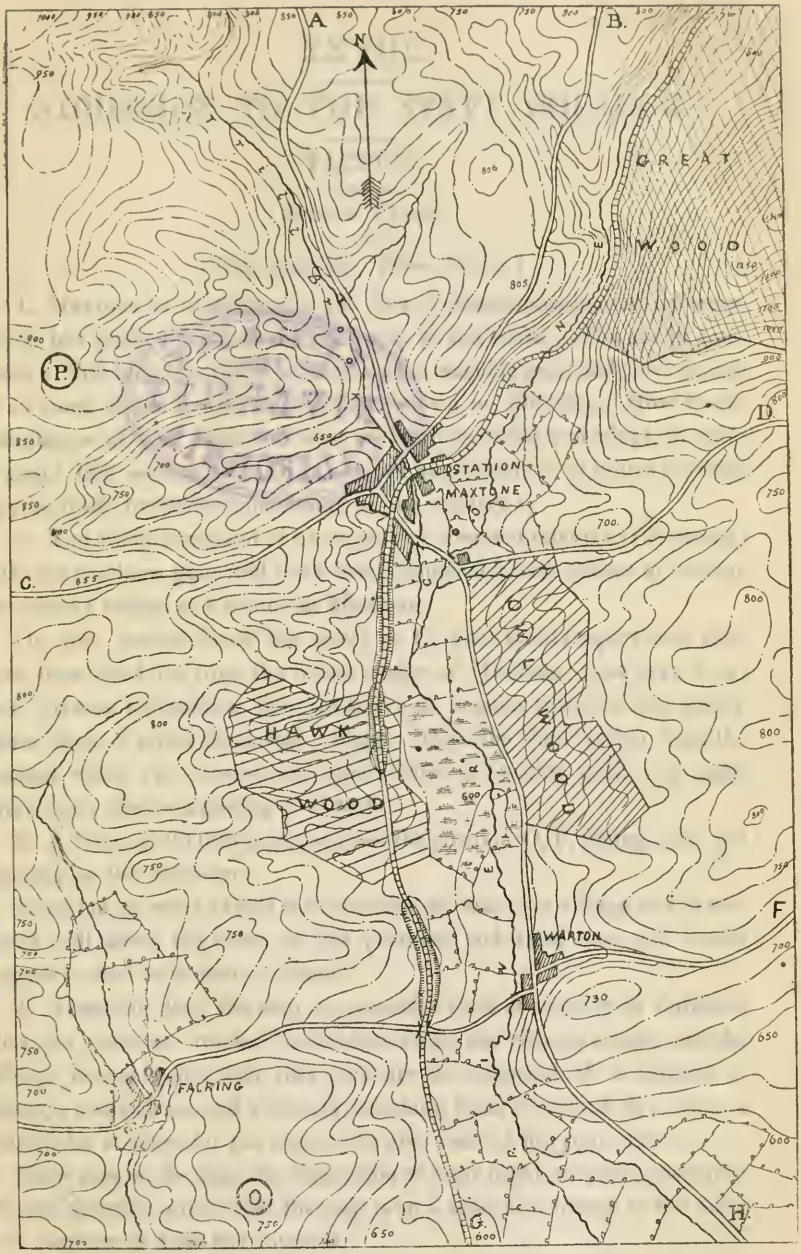
Point out the strong and the weak points of this position, and describe what dispositions you would make to dislodge the hostile troops.

3. Assuming that you are in command of a similar force to that mentioned in the first paragraph of Question 2, and that you are directed to take up a position which shall bar the advance (from the south) of an enemy on the line H.-A.; select this position, and show on the map how you would occupy it with the troops at your disposal.

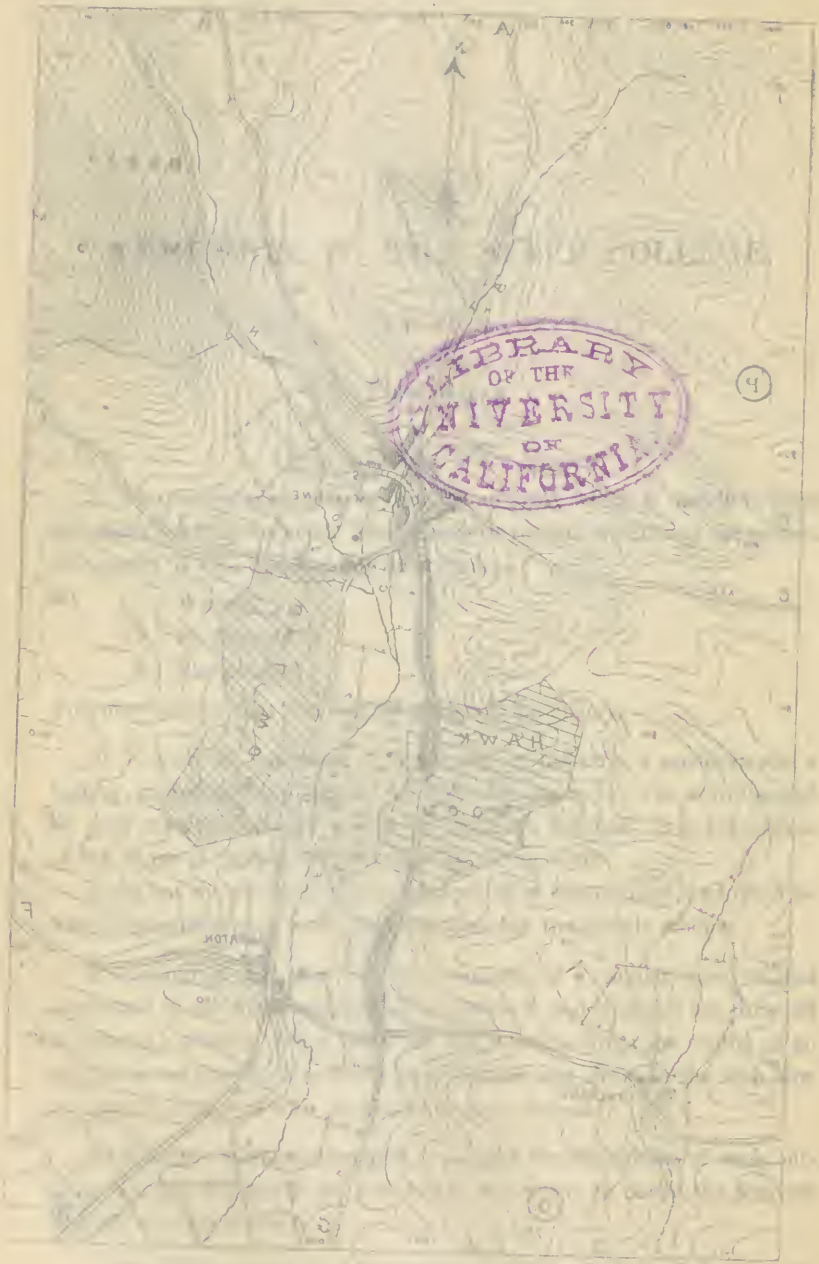
4. State the minimum strength, and show the disposition of such outposts (by day and night) as you would throw out to cover the position mentioned in Question 3.

[N.B.—*When answering Questions* 1 *and* 2 *it will be sufficient to refer to the map; but the troops named in the answers to Questions* 3 *and* 4 *must be actually shown in position on the map.*]

ADMISSION TO THE STAFF COLLEGE.



Scale (except for Question 4, Second Paper), 1½ inches to one mile.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XXVIII.

ADMISSION TO THE STAFF COLLEGE.

TACTICS.

Second Paper.

(*Time allowed—Three Hours.*)

1. Maxtone is a station on the line of communications of an army, which has pushed down beyond the map to the south. You are in command of 200 infantry, thirty cavalry, and a machine gun, and have charge of so much of the line of railway as is shown on the map. How would you dispose of your force and what precautions would you adopt, in order to guard this section of railway against any attempts to injure it which may be made by armed inhabitants of the country?

2. You are in command of a company of mounted infantry (100 strong) with one machine gun, and have been despatched with orders to destroy the railway bridge and station at Maxtone.

On your arrival (from the west) at C, your scouts report that they have been fired on from the western edge of Maxtone; you have, however, private information that there are no regular troops of the enemy nearer than 5 miles from that village. Describe your action from the moment when you receive the report from the scouts until you again arrive at C, after completing your task.

3. A force of 20,000 men occupies the position O, P, facing east, and standing on the defensive.

Examine to what extent the existence of Maxtone village and Hawk Wood will affect the value of this position, and state how you would propose to deal with each of them.

4. Assuming that the map represents a tract of country in Zululand (that the roads are tracks, the bridges fords, the villages kraals, and the railway non-existent), and that you are in command of a brigade of infantry, a squadron, and a battery marching from E towards B; select a position for a laager for the night, and give reasons for your choice.

Show also on the map the disposition of your night outposts, assuming (for this question alone) that the map is on a scale of 3 inches to the mile, with contours at 6·25 feet interval.

[N.B.— *When answering Questions* 2 *and* 3 *it will be sufficient to refer to the map; but the troops named in the answers to Questions* 1 *and* 4 *must be actually shown in position on the map.*]

APPENDIX II.

MEMORANDA

ON THE CONSTRUCTION OF

CAPTAIN GALL'S TACTICAL MODEL,

AND ITS USE IN BARRACK-ROOM INSTRUCTION.

By MAJOR ASHBURNER, Queen's Bays.

COMPILED BY ORDER OF

LIEUT.-GENERAL SIR F. W. J. FITZWYGRAM, Bt.,

INSPECTOR-GENERAL OF CAVALRY.

Captain Gall's Tactical Model.

1. * This model affords a means of conducting all kinds of studies of strategy and tactics in a barrack room.

2. The model can be improvised in a few minutes on an ordinary barrack room table.

3. Its use requires no previous knowledge of conventional signs.

An instructor is enabled to put out a representation of any sort of ground, and to show upon it the position and movements, not only of bodies of troops, but also of individual men.

4. The distances passed over and the time required for marches can be measured on the model by a simple scale.

5. Soldiers take much more interest in a model like this than when a black board is used, as they can understand it much better.

6. The model in a more extended form can be used for minor war games over a large space of ground.

* This model was exhibited by Captain H. R. Gall, at the Royal United Service Institution, under the patronage of the Adjutant-General to the Forces, in May, 1883.

The scale of 18 inches to one mile, *i.e.*, about 100 yards to 1 inch, renders the moving of the piece much easier than on 6 inch contoured maps; and the actual features being shown, the operations are more interesting to spectators.

7. Lastly, the model can be used for teaching military surveying, especially "eye sketching." Traversing and triangulation can be practised exactly as in the field. Tall pins or a pair of compasses struck upright serve to mark the intersection of roads, &c., as objects to take "shots" upon. The measurements are made by means of a tape, and put on paper with the protractor in the usual manner.

It is hardly necessary to mention that if barrack tables are employed the iron trestles will affect the magnetic needle.

The use of a clinometer and the method of contouring can be taught on the model.

Construction of the Model.

1. An ordinary barrack table serves to display the model.

The usual dimensions being 6 feet by $2\frac{1}{2}$ feet, one table will afford an area of 15 square feet, which, if a scale of 18 inches to 1 mile be adopted, will represent $6\frac{2}{3}$ square miles. Two or more tables may be joined together if a larger area is required.

2. A billiard table has been used to carry the model. The green surface and the lamps are very convenient for use at night, and no materials need be employed that could injure the cloth.

Features and Details.

1. Hills are represented by placing on the table any materials that will roughly take the desired shapes, and throwing a cloth over them. The cloth may be a barrack sheet or blanket. The best material, however, is a thin soft stuff of a shade of green, known as foulard serge, which can be obtained at any draper's.

Either of the following methods may be used for the hill shapes under the cloth:

(*a*) Plates, dishes, cups, and basins reversed.

(*b*) Small heaps of hay well pressed and somewhat twisted together or tied with wire to give a firmer surface.

(*c*) Pieces of half-inch deal boards, of various shapes, with their edges sloped off. On these the required hills may be made by crumpling up large pieces of brown paper or old newspapers into lumps. These are attached to the boards with thin wire. A few tacks will be found useful to keep down the edges, and to make depressions.

(*d*) Sheets of tin may be beaten up into hills with a round-headed hammer used over a small hollow in a block of wood. This method is cheap, portable, and gives the most natural appearance, but it has the disadvantage that pins and tacks cannot be stuck into the hills on the model.

(*e*) Cotton wool answers as well as anything.

When the necessary arrangements for hills, &c., have been made, the cloth is then thrown over them, and smoothed into the hollows and over flat ground.

2. Rivers and Water, &c., represented by blue tape, paper or cardboard cut into the required shapes with scissors, and kept in position with small tacks or pinned to the cloth.

3. Canals can be shown by blue braid.

4. Roads and Lanes, brown tape of two or three widths will answer well.

5. Railways, by red braid with a cross-bar pattern, strips of cardboard or paper coloured red.

6. Telegraphs a row of tall pins with their heads connected by a thread.

7. Bridges, short strips of bent cardboard or tin, with their ends secured by tacks.

8. Fords, the road is interrupted at the stream.

9. Woods, the dried moss sold in bundles can be used in various ways. It may be glued on to pieces of cardboard or thin board, tied in bundles to pieces of perforated zinc, or sewn on bits of green cloth.

10. Hedges, by dried moss attached to narrow strips of cardboard, and secured with glue, pins, or tacks, or sewn on narrow tape.

11. Walls, slate pencils answer well.

12. Houses, small blocks of wood. A box of children's bricks will do. They may be stained with red and black ink.

13. Ground under plough can be shown by pieces of brown paper cut to represent fields, heather by purple paper, crops by yellow paper, and so on.

14. Troops are represented as in the war game, and can be cut out of cardboard or sheet lead. Lead is best on account of its weight, but it is difficult to cut neatly. Bright blue and red varnish is easily made by dissolving sealing-wax in methylated spirit.

Men in open order may be represented by beads on a thread.

For purposes of instruction only and not for minor war games, it is recommended to use toy lead soldiers to represent individual men. A box containing a dozen figures can be purchased for a penny. As the bases of the toy soldiers are invariably too narrow for stability, pieces of cardboard should be cemented to them. A sixpenny bottle of diamond cement will suffice for a large number.

For war games individual men are best indicated by beads or large shot flattened. Very few lead figures are required. In outpost and reconnoitring instruction, however, the use of figures adds much to the interest of the men.

15. Fire is indicated by tufts of cotton wool attached to a split shot. Large and small tufts are required for artillery and musketry fire.

Scale of Model.

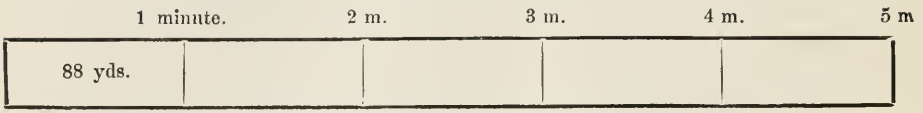
Any scale can be assigned to the model. It has been found that 18 inches to 1 mile is very convenient. An inch represents a hundred yards so very nearly that for all practical purposes a common tape marked in feet and inches will suffice. Tapes marked to five feet cost one penny each.

If a sheet is used it may be ironed out into eighteen-inch squares, which will represent a square mile.

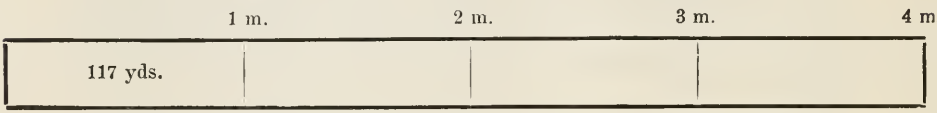
Measures.—It will be convenient to have strips of cardboard half an inch wide, long enough to show distances passed over in five minutes, with marks at minute intervals; also measures showing the range of artillery and musketry fire.

The measures below are for 18 inches to 1 mile only. [Spaces can be doubled for 1 yard to 1 mile, &c.]

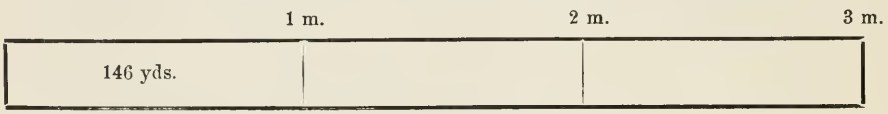
1. Infantry walk 3 miles an hour, 88 yards a minute.



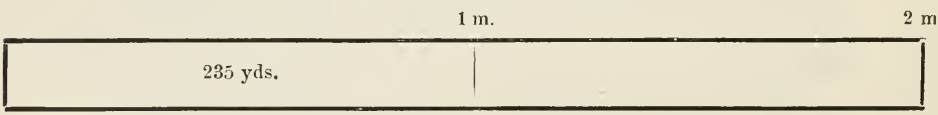
2. Cavalry walk 4 miles an hour, 117 yards a minute.



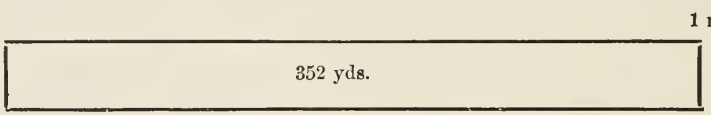
3. Cavalry trot and walk 5 miles an hour, 146 yards a minute.



4. Cavalry trot 8 miles an hour, 235 yards a minute.



5. Cavalry gallop 12 miles an hour, 352 yards a minute.



Artillery as for Cavalry.

Notes by the Author.—When instructing men by the aid of a model (which is generally preferable in every way to a map) it will be found a good plan to seat them on low forms round the model with their eyes on a level with it. They then realise the scale better and are not so apt to be deceived as by a bird's-eye view. To an unpractised eye a map is often very deceptive. Looking *down* on a real piece of country, even, or on a model, is misleading, unless accustomed to judging distances from a bird's-eye point of view.

Men should be constantly reminded that a man on foot in a close country can rarely see further than 700 or 800 yards, and ought not to shoot at individuals beyond 200 yards.

A sportsman in a rough or hilly country seldom fires at large game beyond 150 yards, while 60 yards is considered a long shot at a tiger by a man on foot.

APPENDIX III.

SCHEME

FOR THE DEFENCE OF FRIMLEY VILLAGE

AND THE

WOOD TO THE WEST OF IT.

Central points of a position taken up by an army corps on Fern and Frith Hills, facing South.—Time available; 48 hours.

Force.

1 brigade of infantry, war strength.
1 company R.E.
2 Gatling guns.

One section of equipment troop accompanies the force.

DESCRIPTION OF THE POSITION.

RIGHT.

The wood forming the right of this position has a front of about 900 yards, and, for description, may be divided, as in the map, into three parts, viz.:

Covey Wood.

Hard wood trees, of no great growth, thick underwood; its southern portion swampy, and bounded by a wet ditch, from 15 to 20 feet wide.

Gaston Copse.

Same description of trees, but ground drier, and underwood recently cut.

Goldy Moor.

Bounded on the south side by an earthen fence, with a wet ditch on the inner side, its southern portion composed of same description of hard wood trees, thick underwood, but in the belt connecting with the Bristow Farm by-road (*see* Plan), chiefly composed of small fir trees with less underwood.

CENTRE.

The centre of the position has a front of about 600 yards, and is composed of meadow land much intersected by fences.

LEFT.

The village of Frimley forms the left of the position. Its houses, mainly clustered and dotted along the two main roads, from Bagshot and York Town to Frimley Green and Farnborough [their positions being fairly accurately represented in the accompanying sketch] are built generally of brick; the most substantial being Frimley Lodge, Cedar Lodge, the Manor House, and the Church. The left front of the position, lying between these main roads, is meadow land, also intersected by fences.

Nature of Fences.

The fences generally are banks of earth, varying in height from three to six feet, in no case less than two feet thick at the top, mostly topped with brushwood, and having either wet or dry ditches on the inner side.

River.

The river Blackwater, which runs from east to west along the greater portion of the front of the position, is a small stream of from five to 15 yards broad, whose bushy banks, muddy bottom, and liability to floods, render it a formidable obstacle.

Slope of Ground.

The ground slopes very gently from the rear of the position towards the river. It rises on the enemy's side, and good artillery positions would there be afforded him were they not commanded by the protecting artillery on Frith and Fern Hills.

SCHEME OF DEFENCE.

Wood.

By improving existing fences, digging shelter trenches, clearing brushwood, and placing obstacles, to defend the outer edge of the wood by a single continuous line.

By felling trees, clearing brushwood, and by improving the northern boundary fence, to render that fence available for a second line of defence.

To arrange paths of retreat for the defenders of the front line.

Between Village and Wood.

To defend the ground in front of the village by bringing a cross fire from the wood and the village upon it, and by removing such fences as would in any way interfere with that fire.

Village.

To defend the village: 1st, by the outer line, as shown on the accompanying plan, making use, as far as possible, of existing fences, supplemented by shelter trench; and, 2ndly, by demolishing such houses as would afford cover to an enemy, and retaining those most suitable for defence; to connect these latter by an earthen parapet, and form with them a second line.

REASONS FOR ITS ADOPTION.

Wood.

The wood is defended in a single continuous line: 1st, because the nature of the ground, the non-existence of any avenues to the front, and the obstacle of the river Blackwater render any offensive movement on this side impracticable, and reduce its *rôle* to that of passive defence; and, 2ndly, because the wood is too small, advantageously to admit of a second line of defence in the wood itself.

Looking at the large open spaces which exist between the extremities of the wood, it has been deemed advisable to complete the clearing of that wood at a comparatively small cost of labour, and to assign to the second line of defence the task of preventing the enemy debouching from it.

Village.

The outer line of defence of the village has been chosen with a view to combining a not too great extension of the disposable force with the desire to defend the two main roads and the bridge, to oppose the passage of the river, and to connect with the defenders of the position on the left. Existing fences have been chosen as entailing less labour than the alternative demolitions and constructions, and because the numerous trees in the vicinity protect them, in some degree from enfilade, to which, at first sight, they appear to be exposed.

The second line of defence, for which the most substantia buildings in the village are most happily situated, has been chosen with a view to the main objects, viz.: a denial to the enemy of the two main roads which run through the village, and the defence by cross-fire, of the ground between the village and the wood.

WORK PROPOSED.

Covey Wood.

Dig shelter trench 450 yards in length. The greater portion of this trench will be made according to Profile B, Shelter Trench (*see* Plan), as the ground is swampy, and for the same reason it will be placed as near as possible to the path running through this portion of the wood. To open a clear field of fire, and at the same time to create an obstacle; the brushwood 450 yards by 30 yards (square yards, 13,500) in front of this trench is cut half through, near the ground, and laid towards the enemy.

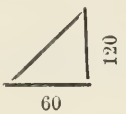
Gaston Copse.

150 yards of shelter trench to be dug in the usual manner, and as no underwood exists, the existing hardwood to be felled and formed into abatis.

Goldy Moor.

The existing boundary fence to be improved. A banquette to be formed by filling up the wet ditch on the inner side with brushwood. For this purpose the bundles now lying

in Gaston Copse would be useful. The hardwood trees in front of this fence are to be felled and placed as in Profile I. on the top of the fence, as protection to the men's heads. As the wet ditch in front of this portion of the wood would afford cover for the enemy's advancing skirmishers, it is to be staked, and an entanglement of wire (obtained from the telegraph in front) placed across it (*see* Plan). In the eastern extremity of this wood a shelter trench, 150 yards in length, is to be cut obliquely, to bring cross fire in conjunction with the village on the ground between them. The brushwood to be cut as in Covey Wood and the boundary fence levelled.

Clearing required 

3,600 yards.

In the rearward portion of the wood a clearing is to be made to the extent of 35,500 square yards. This will give to the defenders of the north boundary fence a clear field of fire of 250 yards.

2nd Line.

The small copse C is to be made defensible, the boundary fence improved, as in Profile IV., and Bristow Farm placed in a state of defence.

Line of Retreat for 1st Line.

The lines of retreat for the defenders of the wood will be for Covey Wood, by the road to the right outside the wood, and for Gaston Copse and Goldy Moor, also outside the wood, by the fields to the left. By this arrangement the front will be cleared.

Ground between Village and Wood.

Here, as interfering with the fire from the first lines of defence of wood and village, it is considered that 1,100 yards of fence should be removed, and as interfering with that of the second, 430 yards.

Village.—1st Line.

From 700—800 yards of existing fences (as shown in Plan), are to be improved, the solutions for the various problems of improvement are also shown on the Plan.

No. III. is considered the quickest method of making a fence with a ditch on your side, and otherwise of convenient height defensible.

Strong stakes of any rough timber are driven across the ditch into the fence, and the platform laid upon them is composed of gates, hurdles, or planking obtained from the demolition of adjoining buildings.

One-hundred-and-fifty yards of shelter trench, form A, connecting the above fences to be dug.

Village.—2nd Line.

An inner enceinte, to be formed by loopholing, and otherwise placing in a state of defence, the houses shaded in the Plan.

Improve 150 yards of fencing according to Profile V. Loophole the adjoining garden wall and also that in rear of the Manor House.

Connect the loopholed buildings by means of stockade work.

Place a barricade with passage through it on the road to Cedar Lodge stables.

Place abatis round 2nd line of defence, 500 yards.

Make gun pits where indicated for the two Gatling guns.

Destroy the fences round the outer line which would afford cover to the enemy, 1,200 yards, and such buildings as would interfere with the defence of the enceinte, or which would in this case give cover to the enemy from *which to oppose an offensive* movement.

Recapitulation Work.

Wood.

Shelter Trench. Yards.	Clearing. Square Yards.	Fences Improved. Yards.	Buildings.
750	52,600	950	1

Wood to Village.

Fence destroyed.
1,600 yards.

Village.

Fences Improved. Yards.	Walls ditto. Yards.	Shelter Trench. Yards.	Stockade. Yards.	Buildings made Defensible.
1,000	250	150	90	12

Abatis.	Gun Pits.	Demolitions.	
550	2	Fences 1,200 yards	Houses, &c.

Time and Distribution of the Working Parties.

Fences.

It has been calculated that of the fences, with the exception of Nos. I. and V., which entail the extra labour of cutting down trees, the work would be done at the rate of three yards per man per hour, but in the following distribution two yards per hour only has been allotted :—

Shelter Trench	2 yards per man per hour.		
Abatis (Data)	10 men.	20 yards.	6 hours.
Stockade	8	6	6
Cutting Brushwood	96 sq. yds. per man,		6 hours.
Gun Pits	6 men,	1 hour.	
Removing Fences	4 yards per day.		

This latter calculation has been based on the extreme average of the fences being five feet in height and three feet in width.

Calculating for easy soil, this would give 10 feet as the amount of a man's task in length, but considering that the fences need not be razed completely to the ground level, four yards has been considered an easy task.

In distributing the working parties, it has been endeavoured to contrive that the tools in use, in village and wood, should be interchangeable, and that the tools used for felling in the wood one day should be available for cutting abatis for the village the next, and the same with the implements for digging.

TOOLS.

The tools available are held to be—

Shovels.	Picks.	Axes.	Bill Hooks.	Saws.	Crowbars.
500	300	125	370	25	20

WORKING PARTIES.

The battalions defending the Village and Wood are each required to furnish two working parties, to be employed as follows :—

FIRST DAY.

Wood.—Party No. I.

Tools.		
Bill Hooks.	Hand Axes.	Hand Saws.
350	125	25

550 men will be employed the first day making the required clearing.

This they will complete.

Village.—Party No. I.

Tools.		
Shovels.	Picks.	Bill Hooks.
230	120	20

350 men will be employed for two hours at making shelter trenches, improving fences, and walls.

Wood.—Party No. II.

These tools will then be handed over (as required) to 250 men of the battalion defending the wood, and these men will be employed for two hours in cutting the shelter trench and improving the front line of the wood.

Party No. II.—Village.

Shovels.	Picks.
270	180

The remainder of the available shovels and pickaxes, viz., 450, will be used by 450 men in removing fences. They will be able to remove in the day's work 1,800 yards of fence, viz., 1,200 on their own side and 600 yards between them and the village.

Wood.—Party No. II.

After cutting the shelter trench, the same party will be employed for two hours in improving the north boundary fence of the wood.

Party No. I.—Village.

Party No. I. will be employed for two hours in loopholing and placing the buildings in a state of defence. This will complete the first day; eight hundred men per battalion having only been employed, and part of those for only four hours. From the remainder the guards, cooks, orderlies, &c., are taken.

Engineer Company.

No great haste or skill being required in the work, the engineer company is chiefly employed in superintending.

SECOND DAY.

Village.

Six hours work for 300 men in making abatis, and six hours for 120 men in making stockades is required. As this only employs 420 men they are relieved after three hours work.

The tools used in felling the wood are available.

The two gun pits are dug by 12 men in one hour, and the demolition of buildings by gunpowder, &c., is entrusted to the engineer company. All required improvements are effected.

Wood.

Six hours work in removing fences is required for 250 men, the tools in use the day before being available. 375 men are employed; they are relieved after three hours work, and the remainder of the day is occupied in improving defences.

Distribution of the Defenders.

In considering this, the example given in "Home's Précis of Modern Tactics," * has been mainly followed, and the defence of the outer line (village) closely tallies, as far as numbers are concerned, with that example. It is considered that the outer line is weakly defended, but this distribution has been adopted because it readily adapts itself to the employment of the tactical units involved. In accordance with it, one half battalion is sent to defend the outer line, two companies being extended along it, and two companies being in support.

These companies are placed in as safe a position as possible.

As the attack develops itself, the supports are used to supply losses, and two companies, hitherto kept in a safe position at A A, are brought forward and placed to defend the second line. The defence of the buildings and walls on the right are entrusted to the right company, and that of the Church, Manor House, and connecting fence to the left company.

If the outer line is carried, the defenders retire along the lines indicated in Plan, thus clearing the front for the fire of the second line. When reformed, they will reinforce the latter. Should the second line be carried, the defenders will retire by the two roads indicated, the direction of which enables their concentration.

This concentration will be effected at B, covered by the two companies in reserve, and a counter-attack, aided by the general reserve battalion stationed at Frimley House, may then be made. The same disposition has been adopted for the defence of the wood.

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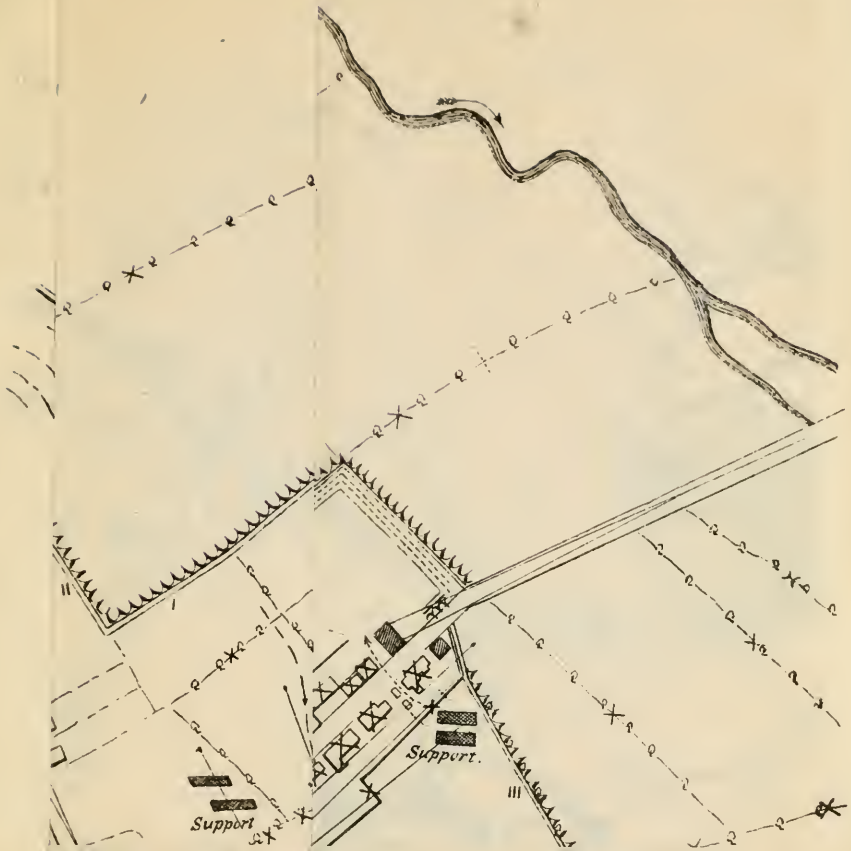
* Page 200.



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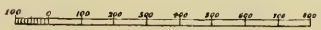
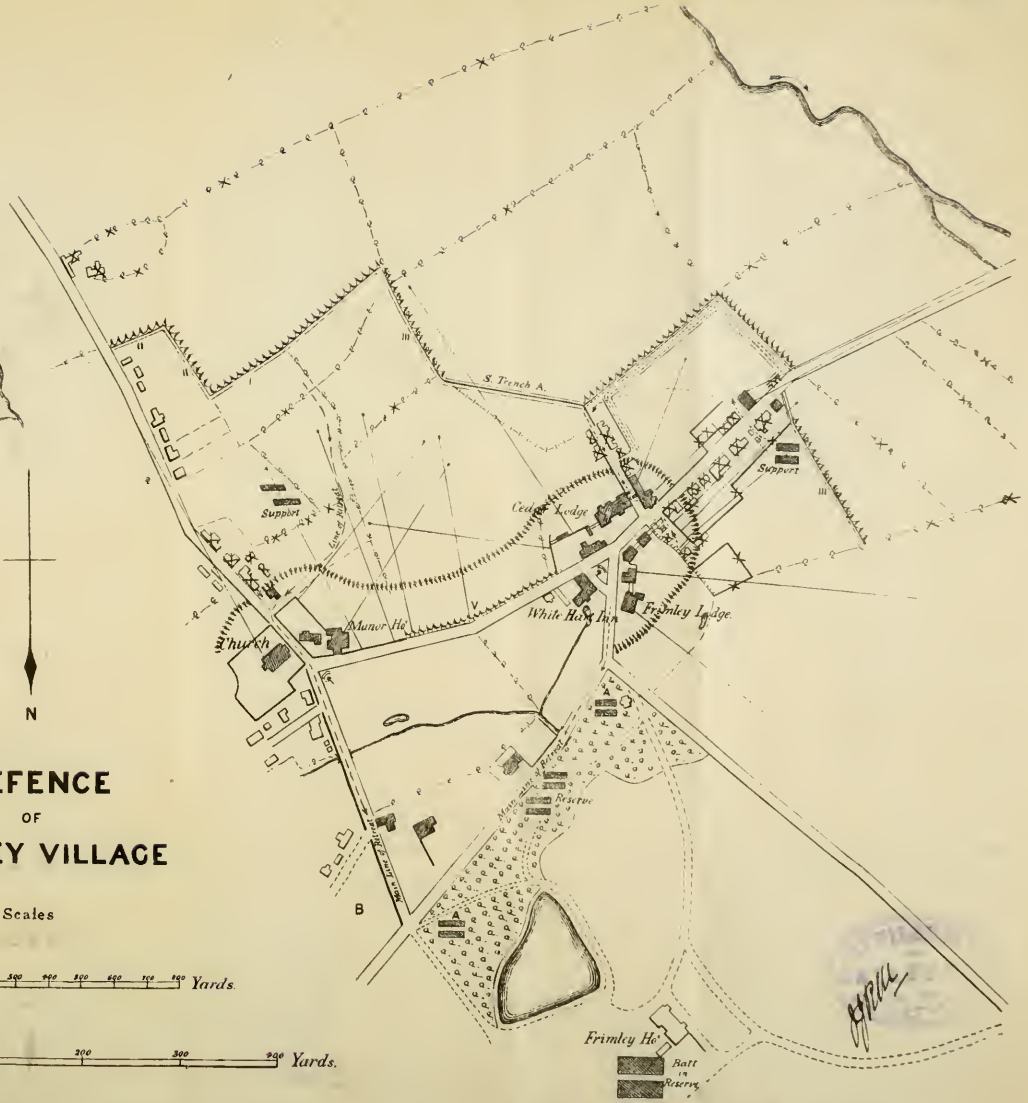
DEFENCE
OF
FRIMLEY VILLAGE

Scales





Two companies will man the first line, having two companies in support behind their respective portions of the wood.

Two companies will man the second line, and will cover by their fire the retreat of the first line, which, as directed, will be eccentric.

When reformed, the defenders of the first line will reinforce those of the second.

Two companies will remain in reserve in rear of Bristow Farm.

May, 1875. T. J. R. M.

* Page 200.

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May, 1875. T. J. R. M.

APPENDIX IV.

CAVALRY IN MODERN WAR.

A RETURN to mass tactics is now advocated by experienced Continental soldiers, and it is generally acknowledged that the organization and training of cavalry must have this precept as its basis. To lay down fixed rules for cavalry charges would, however, be fatal to the dash which is, above all, the true characteristic of a good cavalry leader.

The fundamental principles of cavalry tactics remain unaltered, and its chief *rôle* in battle, as heretofore, will be at the head and on the flanks of its own army, covering deployments, while threatening those of the enemy, seizing favourable opportunities for surprising artillery and advanced infantry and for co-operating independently with the other arms. While to reap the fruits of a victory, or to cover a retreat, if the ground admits of their action, a commander will always look to his cavalry and horse artillery, their conduct in both cases being characterised by an absence of hesitation, and an almost total disregard of risks which would be reprehensible under ordinary circumstances. The following extract, which seems to express the prevailing views which are held on the Continent on the subject of "Cavalry in Modern War," is taken from an article which appeared in the "Revue de Deux Mondes," 15th September, 1889, translated in the Intelligence Division of the War Office by Colonel C. W. Bowdler Bell :—*

"THE BATTLE.

"Two modern armies, with huge fronts and flanks in wide and deep columns, are in presence of each other, if not visually, at any rate by contact. Already the networks formed by their patrols touch and

* All students of tactics, cavalry officers especially, should carefully study this most instructive and interesting pamphlet.

embrace each other. A few steps more, and the two monsters will have come to blows.

"What share will the cavalry take in this gigantic collision?

"It has been said or written to satiety, that the indefinite improvements in firearms would condemn large masses of cavalry to impotence. But if we enquire thoroughly into the value of these declarations, we shall be astonished to find that they rest on arguments of assertion, and rarely on an exact analysis of facts; and, indeed, if we endeavour to deduce from the study of campaigns the causes which, at certain epochs, have extended or diminished the *rôle* of cavalry, we find that these causes have no strict relation to the changes of armament, but depend almost exclusively on the principles which have governed the training and employment of the arm; in a word, on the character of those who have had the command.

"This lesson shines out clearly from one end of history to the other. If it were otherwise, the cavalry under Frederick would have played a much more subordinate part than under Charles V., and the squadrons of the First Empire would have gained less brilliant successes than those of Louis XIII., or Louis XIV. In fact, the value of that arm appears to be quite unaffected by the considerations habitually brought forward by its detractors. It is not regulated by the power of firearms. Cavalry is in jeopardy when it has no leaders who understand how to train it. Muskets carried further and straighter in Napoleon's time than in the days of Charles XII., or Gustavus Adolphus; but anxious to make use of it, having the same faith in it which it had in him, and thinking more of its real use than of how it might be spared, he always placed it where it could intervene with the best chances of success, and put it under the orders of generals who were competent to make vigorous use of it. Thus, at Marengo, Aspern, Eylau, and Borodino, it decided in an almost regal manner the fate of the day.

"These examples are, however, somewhat distant, but there are more recent ones in 1866 and 1870, which formerly disprove the theoretical commonplace of the uselessness of cavalry. Custozza, Königgrätz, Vionville, are at any rate three modern battles. As an exception (and too rare a one), it was decided to have recourse to the cavalry, and the results were considerable, and such as had not been hoped for. At Custozza, two bodies of Austrian cavalry, ridiculously out of proportion, viz., fifteen squadrons on on side, and only one on the other, threw themselves on the heads of columns of the 3rd Italian Corps, at the moment of their debouching on the field of battle. The moral effect, the shock, produced by their impetuous charge was such, that the whole

Corps was disorganized and paralysed for the rest of the day. Sixteen squadrons rendered 25,000 immobile, and diverted them from the field of battle. At Königgrätz, the Austrian cavalry divisions, unskilfully massed in rear, were unable to intervene either in the opening scenes or in the course of the battle. But towards the close, when the Austrian army had been irretrivably beaten, it was decided, all too late, to employ them. Two divisions hurled themselves against the victorious Prussian columns, and by their heroic devotion prevented the retreat being turned into a disorderly rout. At Voinville, the legendary charge of the six squadrons of Bredow's brigade cut short the movement of the French 6th Corps, and enabled the Prussian general staff to bring fresh troops into line. Bredow's brigade was worsted, it is true, but not until it had saved its own army from imminent dangers and re-established the equilibrium which had been disturbed. Here, then, are three definite facts which are opposed to the didactic subtleties which people are wont to accept so lightly.

"Here are three modern battte-fields on which at three different moments, viz., the commencement, the middle, and the close of the day, the cavalry intervened with incontestible success.

"By its audacity it prepares a victory; by its devotion it wards off a disaster. In short, it produces tactical results of the first order."

It might be urged that none of the cases here quoted are conclusive arguments in favour of cavalry *versus* infantry.

The first example, Custozza, was a favourable opportunity promptly seized, for attacking infantry before it deployed.

The second was heroic, but singularly favoured by the total dissolution of all tactical units, which marked the introduction of the breach-loading rifle. The battle of Königgrätz was won by a mob of skirmishers which, although victorious owing to their superior fire action, presented at the close of the battle an opportunity for the Austrian cavalry to charge, which the Prussian army is not likely to offer again.

The third case, Bredow's charge at Voinville, was a death-ride, one of those critical situations when the superior mobility of cavalry seems almost to demand its sacrifice in order to gain time for reinforcements of infantry to come up. Between the aspirations of cavalry enthusiasts and the opinions of those who are perhaps inclined to somewhat over-rate, not the improvements in modern firearms, but the self-reliance and fire-discipline of infantry fighting on the extended fronts, which the efficiency of these arms now demands; there is, without doubt, an independent medium tactical *rôle* for cavalry to play in co-operation with the other arms on the battle-fields of the future. Until the new cavalry drill-book

is issued the question of cavalry *versus* cavalry formations cannot be profitably described in a book of this description.

On the Continent cavalry is now being trained to manœuvre very rapidly, to deploy from column into line while moving at a gallop. The German tactics seem to be enveloping in contradistinction to out-flanking. This accounts for the rapidity of the movements, but the soundness of the principle has yet to be tested. Enveloping tactics require superior numbers, and are liable to be pierced in front and out-flanked by a skilful opponent.

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